Vol. 927 Number 4

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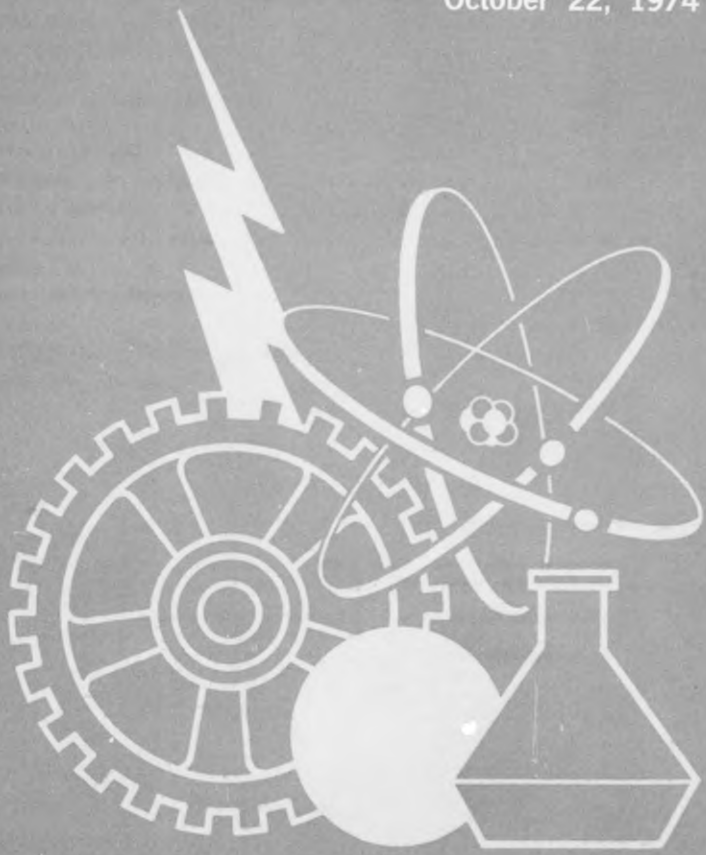
PATENTS

October 22, 1974



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 22, 1974 Volume 927 Number 4

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicant on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before November 15, 1974.

Barnes, Richard M., 1 Minturn Road, Bronxville, N.Y. 10708
Harbert, Paul, 67 Yonge St., Suite 812, Toronto, Ontario, Canada
Laudenslager, Lucie H., 1391 Springhouse Road, Allentown, Pa. 18104
Oyen, Gerald O. S., P.O. Box 434, Sta. A, Ottawa, Ontario, Canada
Sadik, Achmed N., Northern Electric Co. Ltd., Garland Bldg., P.O. Box 3511, Sta. C, Ottawa, Ontario, Canada
Sher, Richard J., 9336 Kite St., Burke, Va. 22015
Wendel, Helen R., 1455B N. Van Dorn St., Alexandria, Va. 22304

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Removal From Register

Pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases, a letter was directed on July 16, 1974, to Mr. Walter J. Jagmin at 1607 Main Street, Dallas, Texas, 75201, the last post office address furnished by him to the Committee on Enrollment. No reply was received within the period of thirty days therein set. Accordingly, his name is being removed from the Register of Attorneys.

LUTRELLE F. PARKER,
Sept. 24, 1974. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, **filed** Jan. 10, 1974, D.C. Del. (Wilmington), Doc. C.A. 74–4, *Colonial Alloys Company* v. *Textron Inc.* **Same, filed** Feb. 1, 1974, D.C. Del. (Wilmington), Doc. 74–22, *Colonial Alloys Company* v. *Indian Head, Inc.* **Same, filed** Feb. 27, 1974, D.C. Del. (Wilmington), Doc. 74–32, *Colonial Alloys Company* v. *Hayes-Albion Corporation.* **Same, filed** Mar. 4, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c602, *Colonial Alloys Company, etc.* v. *Kinkead Industries, Inc.*

3,122,610, A. Csicsatka, CIRCUITRY FOR MULTIPLEX TRANSMISSION OF FM STEREO SIGNALS WITH PILOT SIGNAL, **filed** Apr. 15, 1971, D.C., S.D.N.Y., Doc. 71–C–1688, *General Electric Company* v. *Philco Distributors, Inc.* Stipulation and order of discontinuance without prejudice and without costs, Apr. 15, 1974.

3,134,583, R. W. Wilson, APPARATUS FOR BULK CURING TOBACCO; **3,244,445,** same, APPARATUS FOR SUPPORTING TOBACCO LEAVES IN BULK FORM FOR CURING, **filed** Mar. 22, 1974. D.C., W.D.N.C. (Charlotte), Doc. C–C–74–65, *Gas Fired Products, Inc.* v. *Rowe Corporation and Powell Manufacturing Company.*

3,241,876, W. S. Saunders, APPARATUS FOR REDUCING LINEAR AND LATERAL WIND RESISTANCE IN A TRACTOR-TRAILER COMBINATION VEHICLE; **3,309,131,** same, MEANS FOR REDUCING LINEAR WIND RESISTANCE IN SINGLE CHASSIS TYPE VEHICLES, **filed** Apr. 8, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–81, *W. Selden Saunders and Rudkin-Wiley Corporation* v. *Vic A. Stroganoff, doing business as Civic Sales and Holland Motor Express, Inc.* **Same, filed** Apr. 8, 1974, D.C., N.D. Ind. (South Bend), Doc. 74–82, *W. Selden Saunders and Rudkin-Wiley Corporation* v. *I.R.C. & D Motor Freight, Inc.* **Same, filed** Apr. 8, 1974, D.C., N.D. Ind. (South Bend), Doc. 74–83, *W. Selden Saunders and Rudkin-Wiley Corporation* v. *Air-Flo Company et al.*

3,244,445. (See 3,134,583.)

3,252,181, J. Hureau, APPARATUS FOR THE PRODUCTION OF PROFILED PIECES SHOWING A LACUNAR OR RETICULATED STRUCTURE; **3,349,434,** same, EXTRUSION OF ARTICLES WITH RIBBED FULL WALLS; **3,381,337,** same, APPARATUS FOR THE PRODUCTION OF PROFILED PIECES SHOWING A LACUNAR OR RETICULATED STRUCTURE; **3,496,965,** same, EXTRUDED PLASTIC TUBULAR STRUCTURE HAVING A RECTANGULAR MESH APERTURED WALL, **filed** Jan. 10, 1974, D.C. Minn. (Minneapolis), Doc. 4–74–C 20, *Conwed Corporation* v. *Nortene S.A. et al.*

3,286,923, Jackson and Braucksiek, THERMOSTATIC CONTROL DEVICE FOR NORMAL AND ABNORMAL CONDITIONS, **filed** Dec. 9, 1969, D.C., C.D. Calif. (Los Angeles), Doc. 69–2434–CC, *Robertshaw Controls Co.* v. *Brannen Pipe & Supply et al.* Filed stipulation of dismissal without prejudice and order thereon, Apr. 18, 1974.

3,309,131. (See 3,241,876.)

3,313,339, T. D. Coe, HEAT TRANSFER APPARATUS, **filed** Apr. 15, 1974, D.C.N.H. (Concord), Doc. 74–96, *Wakefield Engineering Incorporated* v. *Aavid Engineering Inc.*

3,349,434. (See 3,252,181.)

3,381,337. (See 3,252,181.)

3,459,302, David S. Ross, APPARATUS AND METHOD OF FILTERING SOLIDS FROM A LIQUID EFFLUENT, **filed** Apr. 3, 1970, D.C., S.D. Ohio (Cincinnati), Doc. 7463, *Hydro-Clear Corp.* v. *Aer-O-Flo Corp.* Order of dismissal—complaint is dismissed as to Claims 3, 5, and 6, as to any subsequent action against defendant for claimed infringement of claims. Counterclaim of the defendant is dismissed without prejudice, Apr. 25, 1974.

3,496,965. (See 3,252,181.)

3,508,708, Caparone and Dykzeul, PRESSURE REGULATOR CONSTRUCTION, **filed** Aug. 18, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–1834–IH, *Robertshaw Controls Co.* v. *Brannen Pipe & Supply, A. O. Smith Corp. and Emerson Electric Co.* Filed stipulation for dismissal without prejudice, Apr. 18, 1974.

3,537,130, R. L. McDonnell, HIDE PULLING PROCESS, **filed** Apr. 16, 1974, D.C., M.D. Pa. (Scranton), Doc. 74–297–C, *Armour & Company* v. *Edwards Bros. Packing Co.*

3,565,083, S. J. Popell, METHOD FOR SETTING HAIR, **filed** Apr. 23, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c978, *Popell Brothers, Inc.* v. *Associated Mills, Inc.* Order that this cause be and the same is hereby dismissed, Apr. 25, 1974.

3,595,362, W. H. Wolowitz, TYPE-WRITER BACKSPACE AND RIBBON-FIELD CONTROL, **filed** Mar. 27, 1974, Court of Claims (District of Columbia), Doc. 93–74, *William H. Wolowitz and Frallen, Inc.* v. *The United States.*

3,611,910, J. S. Hughes, CORN POPPER, **filed** Jan. 24, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c204, *Ropat Corporation* v. *Mirro Aluminum Company.* **Same, filed** Jan. 24, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c206, *Ropat Corporation* v. *Scovill Mfg. Co.* Memorandum opinion and order, the motion to dismiss because of improper venue is granted, Apr. 25, 1974.

3,671,006, I. L. Berkowitz, REFRIGERATOR WALL PANELS WITH PANEL FASTENERS AND APPARATUS FOR MAKING SAID PANELS, **filed** July 23, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1688–R, *Kason Hardware Corporation* v. *Consolidated Tooling Inc., Roy F. Smith and Lois Smith.* Filed consent judgment and order thereon permanently enjoining defendants from infringing plaintiff's patent, Apr. 24, 1974.

3,675,247, J. O. Ferrell, METHOD FOR FABRICATING PANTY HOSE, **filed** Mar. 7, 1974, D.C., W.D.N.C. (Statesville), Doc. St–C–74–6, *Tights, Inc.* v. *Ridgeview Hosiery Mill Company.* Consent order—action dismissed, Apr. 19, 1974.

3,754,279, Valenti and Follett, THERMAL RECORDER HAVING ANALOGUE STYLUS AND PRINT HEAD, **filed** Apr. 24, 1974, D.C. Mass. (Boston), Doc. 74–1467–S, *Gulton Industries, Inc.* v. *General Electric Company and Mechanics for Electronics Corp.*

3,765,122, R. English, FLYING TOY, filed Apr. 22, 1974, D.C. Oreg. (Portland), Doc. C-74-315, *Roy L. English* v. *North Pacific Products, Inc.*

Re. 14,366, J. P. Fox, DIRIGIBLE HEADLIGHT, filed Mar. 27, 1974, D.C., S.D. Fla. (Miami), Doc. 74-384-C-CF, *Mary MacIntosh Services, Inc.* v. *Irwin M. Robbins and Robbins Originals, Inc. and MacIntosh Services, Inc., of Florida.*

Re. 27,970, *L. W. Johnson, ROCK CRUSHER*, filed Apr. 16, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1058, *Louis W. Johnson* v. *Barber-Green Company.*

D. 197,341, J. E. Cornish, INFANT'S RIDING TOY, filed Oct. 24, 1973, D.C.N.J. (Trenton), Doc. 1532-73, *Judson E. Cornish* v. *Frank Caplan.* Consent judgment dismissing action filed Apr. 18, 1974.

D. 225,569, Burris and Maulbetsch, RIFLE-SCOPE, filed Aug. 22, 1973, D.C. Colo. (Denver), Doc. C-5293, *Outdoor Sports Industries, Inc.* v. *F. W. Woolworth Co. and Berns Wholesale Sporting Goods Co.*

D. 226,607, W. J. Lawrence, BATHTUB, filed Apr. 17, 1974, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL)74-111-C-NCR *Gruber Systems, Inc. and Synthetic Innovations, Inc.* v. *Marmoreal Products et al.*

Disclaimer

3,553,251.—*Hartmut Hauth*, Riehen, and *Dietrich Stauffacher*, Reinach, Basel, Switzerland. ALICYCLIC COMPOUNDS. Patent dated Jan. 5, 1971. Disclaimer filed Aug. 30, 1974, by the assignee, *Sandoz Ltd.* (*also known as Sandoz AG*).

Hereby enters this disclaimer to claims 17, 18 and 19 of said patent.

Certificates of Correction for the Week of Oct. 22, 1974

3,126,786	3,754,118	3,778,473	3,793,183	3,799,983	3,806,877	3,814,177	3,824,202
3,517,957	3,755,111	3,778,715	3,793,283	3,800,130	3,807,471	3,814,218	3,824,268
3,548,489	3,755,374	3,779,265	3,793,313	3,800,175	3,807,697	3,814,253	3,824,443
3,575,170	3,758,277	3,779,471	3,793,521	3,800,223	3,807,716	3,814,442	3,824,466
3,578,612	3,758,396	3,779,672	3,793,655	3,800,289	3,807,758	3,814,619	3,824,515
3,584,015	3,758,465	3,779,956	3,793,695	3,800,322	3,807,813	3,814,799	3,824,542
3,615,767	3,759,388	3,780,134	3,793,867	3,800,435	3,807,865	3,814,848	3,824,685
3,619,646	3,759,637	3,780,558	3,794,032	3,800,749	3,807,949	3,815,176	3,825,004
3,624,392	3,759,817	3,781,725	3,794,164	3,801,085	3,808,084	3,816,222	3,825,694
3,635,637	3,759,845	3,782,209	3,794,286	3,801,399	3,808,298	3,816,734	3,825,774
3,636,174	3,760,819	3,782,870	3,794,352	3,801,595	3,808,363	3,817,096	3,825,782
3,656,833	3,762,423	3,783,016	3,794,403	3,801,602	3,808,376	3,817,381	3,825,793
3,658,870	3,763,640	3,785,135	3,794,576	3,801,708	3,808,424	3,817,861	3,825,805
3,658,901	3,764,577	3,785,801	3,794,626	3,801,712	3,808,485	3,817,913	3,826,310
3,675,204	3,765,603	3,786,065	3,794,634	3,801,750	3,808,628	3,818,350	3,826,321
3,682,066	3,765,767	3,786,131	3,794,732	3,802,533	3,808,724	3,818,804	3,826,349
3,693,223	3,765,833	3,786,141	3,795,137	3,802,559	3,808,747	3,819,091	3,826,697
3,693,887	3,765,901	3,786,333	3,795,533	3,802,607	3,809,024	3,819,256	3,826,781
3,709,786	3,765,986	3,787,350	3,795,978	3,803,124	3,809,044	3,819,511	3,826,792
3,711,547	3,766,022	3,787,361	3,795,987	3,803,167	3,809,077	3,819,591	3,826,835
3,711,548	3,766,635	3,787,428	3,796,042	3,803,186	3,809,553	3,819,599	3,827,263
3,720,069	3,766,877	3,787,435	3,796,265	3,803,317	3,809,633	3,819,649	3,827,343
3,721,328	3,767,621	3,787,471	3,796,800	3,803,318	3,809,698	3,819,777	3,827,402
3,726,661	3,767,686	3,787,508	3,797,218	3,803,433	3,809,887	3,820,702	3,827,793
3,728,342	3,767,711	3,788,850	3,797,366	3,803,578	3,809,999	3,820,928	3,827,867
3,731,987	3,767,938	3,789,121	3,797,968	3,804,181	3,810,114	3,821,273	3,828,026
3,732,209	3,768,611	3,790,452	3,798,115	3,804,508	3,811,111	3,821,378	3,828,249
3,734,454	3,768,957	3,790,470	3,798,135	3,804,795	3,811,117	3,821,386	3,828,309
3,734,732	3,769,280	3,790,529	3,798,483	3,804,884	3,811,309	3,821,462	3,828,441
3,736,992	3,770,771	3,790,548	3,798,769	3,805,044	3,811,831	3,821,525	3,828,565
3,738,386	3,771,136	3,790,660	3,798,941	3,805,164	3,812,430	3,822,056	3,828,585
3,743,275	3,771,463	3,790,913	3,799,034	3,805,195	3,812,468	3,822,106	3,828,601
3,744,116	3,772,405	3,791,163	3,799,296	3,805,691	3,812,673	3,822,164	3,828,992
3,750,009	3,772,789	3,791,388	3,799,628	3,805,870	3,812,747	3,822,473	3,829,065
3,750,411	3,772,927	3,791,699	3,799,901	3,805,966	3,813,312	3,823,145	3,831,173
3,751,481	3,773,859	3,792,025	3,799,917	3,806,360	3,813,370	3,823,183	
3,753,228	3,773,949	3,792,033	3,799,937	3,806,521	3,813,519	3,823,687	
3,753,492	3,776,688	3,792,065	3,799,946	3,806,637	3,813,526	3,823,990	
3,753,552	3,776,882	3,792,093	3,799,950	3,806,839	3,813,592	3,824,099	
3,753,975	3,777,023	3,793,091	3,799,974	3,806,848	3,814,167	3,824,184	

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 28, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-26-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-4-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-23-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures, Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-22-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning, Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-3-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-8-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	11-26-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-8-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	2-14-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82d Congress, approved August 23, 1954 (68 Stat. 704), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,807,804 to 2,811,721, inclusive
Plant Patents..... Numbers 1,646 to 1,655, inclusive

REISSUES

OCTOBER 22, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,206
CONTINUOUS PROCESS FOR THE PRODUCTION OF ETHYLENE COPOLYMERS

Irwin J. Gardner, Scotch Plains, and Charles Cozewith, Westfield, N.J., assignors to Exxon Research and Engineering Company

Original No. 3,718,632, dated Feb. 27, 1973, Ser. No. 81,895, Oct. 19, 1970. Application for reissue Sept. 28, 1973, Ser. No. 401,707

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **11 Claims**

1. In a continuous process for the production of elastomeric copolymers of ethylene and a higher C_3 to C_8 alpha-olefin, which may additionally have polymerized therewith an acyclic or alicyclic nonconjugated diolefin, comprising a staged-reactor system in series, the first reactor having added thereto:

ethylene, a higher C_3 to C_8 alpha-olefin, or additionally an acyclic or alicyclic nonconjugated diolefin, a Ziegler-Natta catalyst composition consisting of a transition metal component and an organoaluminum cocatalyst at a mole ratio of aluminum compound to transition metal component ranging from 2 to 20, and a solvent; the polymerization therein being conducted at an essentially uniform temperature of from about −50° C. to 80° C. and a pressure at least equal to the combined vapor pressure of the solvent and reaction components;

the improvement which comprises:

(a) feeding to the second reactor the effluent polymer cement from the first reactor, [additional higher C_3 to C_8 alpha-olefin,] *at least one of the mono-olefin monomers added to the first reactor,* additional organoaluminum cocatalyst, and a reactivator comprisprising a halo-sulfonyl or *halo*-sulfinyl compound having the general formula

$$R—SO_n—Y$$

wherein R represents a C_2 to C_{12} alkyl, aryl, alkaryl, arylalkyl or cycloalkyl [hydrocarbons] *hydrocarbon,* n is an integer equal to 1 or 2, and Y is a halogen having an atomic number equal to or greater than 17;

(b) subjecting the contents of the second reactor to the same reaction conditions as in the first reactor, for a time sufficient to form a final polymer cement in said second reactor;

(c) transferring said final polymer cement from said second reactor to a quench tank;

(d) quenching said final polymer cement with an inactivating medium for said catalyst components; and

(e) recovering the polymer from said quenched cement.

28,207
POTATO PLANTER

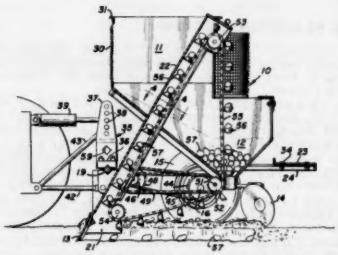
Jack H. Wigham, 4206 NE. 15th St., Amarillo, Tex. 79107

Original No. 3,570,424, dated Mar. 16, 1971, Ser. No. 37,495, May 21, 1970, which is a continuation of abandoned application Ser. No. 716,740, Mar. 28, 1968. Application for reissue Mar. 14, 1973, Ser. No. 341,271

Int. Cl. A01c *7/18*

U.S. Cl. 111—78 **10 Claims**

1. In a potato planter for attachment to a tractor having a rearwardly extending vertically hinged three [way] *point* hitch, said potato planter being of the conveyor chain delivery type having an upwardly and rearwardly slanting conveyor tube, a plow unit mounted on the planter at the bottom thereof and in front of said tube, upper and lower idler sprockets adjacent the top and bottom of said tube, a first drive sprocket on a transverse shaft outwardly of said tube and beneath the upper said idler sprocket, a conveyor chain on said sprockets *and operatively connecting said three sprockets* and including a portion thereof extending through the length of said tube, a hopper surrounding the upper rear portion of said chain outwardly



of said tube, a transverse bar rigidly mounted on the front of said planter and extending substantially across the width thereof, means connecting said bar with the rearwardly extending end of said three way hitch, at least one hinge block clamped on said [boar] *bar,* a lever extending rearwardly from said hinge block, a bull wheel on the extending end of said lever, a second drive sprocket driven by said bull wheel, a driven sprocket on said shaft and a drice chain *means* connecting the last said drive sprocket with the last said driven sprocket[.], *said driven sprocket in driving connection with said transverse shaft and said first drive sprocket thereon.*

28,208
DIRECT POSITIVE FOGGED SILVER HALIDE EMULSION SENSITIZED WITH A CYCLOHEPTATRIENE CYANINE DYE

Akira Sato, Minoru Sonoda, Keisuke Shiba, Masanao Hinata, and Tetsuo Nozoe, Minami-ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

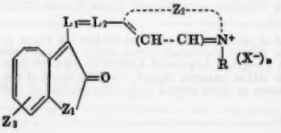
No Drawing. Original No. 3,687,674, dated Aug. 29, 1972, Ser. No. 90,070, Nov. 16, 1970. Application for reissue Feb. 20, 1974, Ser. No. 444,229

Claims priority, application Japan, Nov. 14, 1969, 44/91,238

Int. Cl. G03c *1/36*

U.S. Cl. 96—101 **16 Claims**

17. A direct positive silver halide photographic emulsion comprising fogged silver halide grains and at least one dye of the formula:



wherein Z_3 is a troponoid substituent on the cycloheptatriene ring said substituent being a member selected from the group consisting of a lower alkyl (C_1–C_4) group, a halogen atom, a lower alkoxyl group, an aryl group, an alkylaryl group and a nitroaryl group; Z_1 is a member selected from the group consisting of an oxygen atom and a N–H group; Z_2 is an organic substituted or unsubstituted atomic group necessary to complete a 5 or 6 membered heterocyclic ring selected from the group consisting of the oxazoline series, oxazole series, benzoxazole series, naphthoxazole series, thiazoline series, thiazole series, benzothiazole series, naphthothiazole series, selenazole series, benzolselenazole series, naphthoselenazole series, 2-pyridine series, 4-pyridine series, 2-quinoline series, 4-quinoline series, imidazole series, benzimidazole series, and naphthoimidazole series; R is a member selected from the group consisting of a lower alkyl group, a hydroxy (lower) alkyl group, a lower alkoxy alkyl group, a sulfo (lower) alkyl group, a carboxy (lower) alkyl group, an acetoxy (lower) alkyl, a vinyl methyl group, an aralkyl group, and a sulfo aralkyl group; L_1 and L_2 are a group from the methine series, said L_2 capable of forming a methylene chain together with said R group; X is an anion and m and n each is 0 or 1, providing that n is 0 when the dye forms an intramolecular salt, said dye being present in a sensitizing amount.

28,209

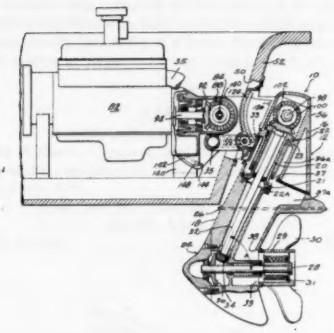
MARINE PROPULSION DEVICE WITH ACUTE ANGLE DRIVE

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Original No. 3,605,678, dated Sept. 20, 1971, Ser. No. 844,457, July 24, 1969. Application for reissue Sept. 5, 1972, Ser. No. 286,148

Int. Cl. B63h *5/12*

U.S. Cl. 115—35 **7 Claims**



5. [The device of claim **1**, wherein said means for rotating said second part of said drive shaft housing about the axis of said drive shaft to afford steering of a boat hull comprises] *A marine propulsion device comprising a drive shaft housing having first and second parts, a drive shaft rotatably extending in said first and second housing parts, means for rotatably supporting said drive shaft housing for vertical swinging movement about a horizontal tilt axis located aft of the boat hull and relative to a normal running position in which said drive shaft extends downwardly and forwardly relative to said horizontal tilt axis, and means for rotating said second part of said drive shaft housing relative to said housing first part about the axis of said drive shaft to afford steering of a boat hull and comprising* a projecting portion on said second part, said projecting portion extending through and rotatably supported in said first part, a crank, means for mounting said crank on the inboard side of a transom, a transversely extending arm on said projecting portion of said lower housing section, and means drivingly connecting said crank to said arm.

28,210

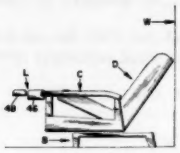
RECLINING CHAIR

Frank Manuel Ré, Holyoke, Mass., assignor to Dual Manufacturing and Engineering, Incorporated, Holyoke, Mass.

Original No. 3,758,151, dated Sept. 11, 1973, Ser. No. 222,563, Feb. 1, 1972. Application for reissue Jan. 22, 1974, Ser. No. 435,461

Int. Cl. A47c *1/02*

U.S. Cl. 297—83 **5 Claims**



1. A reclining chair adapted to be positioned in close adajacency to and forwardly of a room wall when in the upright sitting position and yet so structured as to allow ready assumption of a reclined position without physical contact with the same room wall, the reclining chair comprising, a base, a chassis, a body-supporting unit and a leg-supporting unit, means mounting the body-supporting unit on the chassis for movement betwen upright and reclining positions, means mounting the chassis on the base for linear movements relative to the base as the body-supporting unit is moved, means mounting the leg-supporting unit on the body-supporting unit for movements between retracted and extended positions concomitant with movements of the body-supporting unit, and means operatively-connecting the body-supporting unit and base for moving the chassis forwardly and progressively away from the wall and the body-supporting unit relative to the wall as transition is made from upright sitting position to position of reclination, and for moving the chassis rearwardly and progressively toward the wall and the body-supporting unit relative to the wall as transition is made from position of reclination to upright sitting position.

28,211

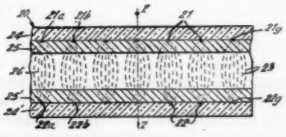
FORCED CLOSURE DIPOLAR ELECTRO-OPTIC SHUTTER AND METHOD

Alvin M. Marks, 153—16 10th Ave., Whitestone, N.Y. 11357

Original No. 3,527,525, dated Sept. 8, 1970, Ser. No. 556,113, June 8, 1966. Application for reissue Sept. 5, 1972, Ser. No. 286,041

Int. Cl. G02f *1/34*

U.S. Cl. 350—267 **17 Claims**



1. A light controlling device comprising *a pair of* spaced transparent sheets, a transparent suspending medium between said sheets, a layer comprising a plurality of elongated *dipoles* [dipole members] freely carried within the suspending medium, each said dipole having a first dimension in *a* [the] direction of elongation on the order of

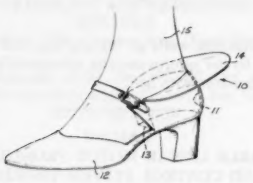
one-half the wavelength of light and a second dimension normal to the direction of elongation substantially smaller than said first dimension [and], *said dipoles* presenting a cross-section to electromagnetic radiation which is a function of their orientation, whereby light transmission through the layer is at a maximum when the direction of elongation of said dipoles are oriented parallel to [the] *a* light path and at a minimum when said dipoles are in random directions, a first series of spaced wire-like electrodes straight line parallel to each other lying in a plane along one of the sheets and carried by one of the transparent sheets, a second series of spaced wire-like electrodes straight line parallel to each other lying in a plane parallel to the plane of the first series along the other transparent sheet, all of said electrodes being parallel to each other, electrical interconnecting means combining selected electrodes into a plurality of sets for each sheet and electrical circuit means to selectively apply electrical alternations to the sets whereby electric field patterns are created within the dipole suspension to control the disposition of the dipoles within the suspension.

PATENTS

GRANTED OCTOBER 22, 1974

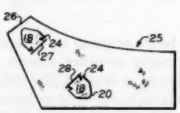
GENERAL AND MECHANICAL

3,842,434
SPLASH GUARD
Juanita E. Nepon, 21640 12 Mile Rd., St. Clair Shores, Mich. 48081
Filed May 11, 1972, Ser. No. 252,488
Int. Cl. A41d *27/12*
U.S. Cl. 2—61 **1 Claim**



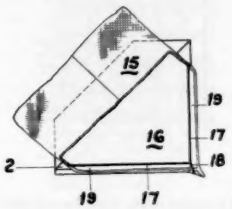
1. An ankle splash guard in the form of a heel fitting open cup, said cup including a generally semi-circular bottom wall, and arcuate edge of which is integral with a vertical upward extending semicylindrical side wall which at its upper edge is integral with a radially outwardly extending flange or rim of substantial width, said rim being generally horizontal with a slightly upward inclined toward its outer peripherial edge, said rim being approximately of equal width at a rear and the opposite sides of said cup, the opposite side corners of said rim being rounded with a curved arc that starts at an end edge of said semi-cylindrical side wall, said ankle splash guard extending substantially forwardly of a breast face of a conventional heel of a shoe in order to extend upon an arch of said shoe.

3,842,435
COLLAR CONSTRUCTION
Richard Williams, Cressona, and Dominic Riotto, Barnesville, both of Pa., assignors to Phillips-Van Heusen Corporation, New York, N.Y.
Filed Jan. 10, 1973, Ser. No. 322,297
Int. Cl. A41b *3/00*
U.S. Cl. 2—132 **10 Claims**



1. A collar stay comprising an elongate strip of flat flexible sheet material having a central portion extending longitudinally over a major portion of the length of said strip; indents formed by tapered parts on said central portion the edges of which converge towards each other, terminating at a point spaced from the end of said strip; end portions on said strip one on each end of said central portion extending from the point of termination of said tapered parts on said central portion, said end portions being narrower than said central portion; tapered ends on said end portions providing an entry tip on said end portions; and a hook portion on said end portions extending over said indents on said central portion at a spaced distance therefrom and extending toward said central portion.

3,842,436
METHOD OF FORMING A POCKET IN THE MANUFACTURE OF NECKTIES
David Hirschson, 25 Lindsfield Dr., Johannesburg, South Africa
Filed Apr. 26, 1971, Ser. No. 137,446
Claims priority, application South Africa, Apr. 24, 1970, 70/2749
Int. Cl. A41d *25/00, 25/16*
U.S. Cl. 2—157 **3 Claims**



1. In a method of forming a pocket in the manufacture of neckties comprising the steps of
locating an end of a strip of tie material containing heat fusible fibers on a supporting surface,
forming a pleat along the longitudinal axis of said strip of tie material,
placing a lining over said end of the strip of material to extend across said pleat and over the edges of the pointed end of the material, and
heat fusing the lining and material together along two lines diverging from said pleat to form a pointed end of the lining and the material.

3,842,437
NARROW ELASTIC WAISTBAND
Roger G. Campbell; Richard E. Goff, Jr., both of Barrington, and Normand D. Guay, Woonsocket, all of R.I., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Jan. 8, 1973, Ser. No. 321,903
Int. Cl. A41f *9/02*
U.S. Cl. 2—237 **7 Claims**

1. A tubular narrow elastic waistband having an inner layer and an outer layer, said inner layer having a concave surface and a convex surface, said inner layer comprising, a plurality of monofilament filling yarns running in the transverse direction of the waistband, a plurality of elastic warp yarns running in the longitudinal direction of the waistband, said elastic warp yarns being woven under tension with non-elastic warp means running in the longitudinal direction of the fabric, said elastic and non-elastic warp yarns being woven with said monofilament filling yarns in a leno weave with the elastic warp yarns on the concave surface and the non-elastic warp yarn on the convex surface of the layer to provide a transverse concave configuration in the layer, and an outer layer disposed on the concave surface of the inner layer and comprising a plurality

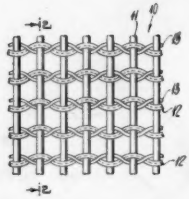
of synthetic texturized warp yarns running in the longitudinal direction of the waistband and intermittently tied to the monofilament filling yarns to produce a smooth surface on the waistband.

3,842,438

NARROW ELASTIC FABRIC

Roger G. Campbell, Sr.; Richard E. Goff, Jr., both of Barrington, and Normand D. Guay, Woonsocket, all of R.I., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 186,364, Oct. 4, 1971, Pat. No. 3,788,366.
This application May 29, 1973, Ser. No. 364,799
Int. Cl. A41f 9/00
U.S. Cl. 2—237 **2 Claims**



1. In a pair of trousers made from stretchable material, said trousers having an inwardly folded edge portion about the waist thereof, a waistband attached to said folded edge comprising a narrow elastic fabric having transversely extending monofilament filling yarns having a denier of from 400 to 2,000, woven with a set of longitudinally extending warp yarns, said set of warp yarns having longitudinally extending center portion and two longitudinally extending edge portions, said center portion having a plurality of elastic yarns having a spandex core wrapped with a yarn that is set in its wrapped configuration, at least some of said elastic yarns being leno woven with nonelastic warp yarns with the leno woven elastic yarns on the face surface and the leno woven nonelastic yarns on the back surface of the fabric whereby the fabric has a transverse concave configuration, said center portion also having nonelastic yarns woven in a plain weave, said edge portions of said fabric comprising texturized yarns whereby the fabric has smooth and soft longitudinal edges, said fabric having from 5 percent to 50 percent elongation in the longitudinal direction, a uniform modulus of elasticity of from 1 to 5 pounds per inch of width at 15 percent elongation and said fabric having less than 3 percent shrinkage when washed and dry cleaned.

3,842,439

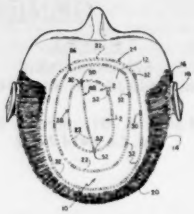
METHOD OF REPLACING HAIR

David M. Connelly, Fayetteville, and Victor Villani, Syracuse, both of N.Y., assignors to David M. Connelly, M.D., Fayetteville and Victor Villani, Syracuse, both of N.Y.

Filed July 6, 1971, Ser. No. 159,957
Int. Cl. A61f 1/00; A61b 17/04
U.S. Cl. 3—1 **3 Claims**

1. A method of replacing hair in a delineated area of a living human body which has been surgically prepared comprising the steps of:

embedding a series of sutures in a concentric ring pattern in the delineated area by inserting the sutures into the body below the surface of the delineated area and looping the sutures above the surface of the delineated area; and



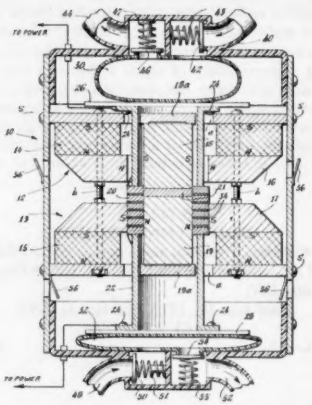
directly attaching wefts of replacement hair to the loops formed by the sutures thereby substantially covering the delineated area with hair.

3,842,440

IMPLANTABLE LINEAR MOTOR PROSTHETIC HEART AND CONTROL SYSTEM THEREFOR

Eskil L. Karlson, 43 Westover Ln., Stamford, Conn. 06902

Filed Sept. 1, 1972, Ser. No. 285,749
Int. Cl. A61f 1/24
U.S. Cl. 3—1 **7 Claims**



1. A prosthetic heart adapted to be implanted within the body of a human being or other animal, and a system for operating it, comprising, a single collapsible chamber, having inlet and outlet ports, adapted to be connected respectively to a vein and an artery, means for opening the chamber to receive fluid from a vein to which it is adapted to be connected, means for closing the chamber and expelling pulses of fluid from it into an artery to which it is adapted to be connected, means for controlling the expelling means so as to provide in the artery predetermined changes in pulse pressure, amplitude and frequency, a source of electric power adapted to be disposed within the body, and circuitry for connecting it to the prosthetic heart for operating it, a source of electric power to be located outside the body, and circuitry including, leads adapted to be implanted within the body, and connected to said source of power to be located within the body, leads connected to the source of power outside the body, and separable contact members connected to said leads respectively and adapted when physically brought together to connect the source of electric power outside the body directly to the

source of electric power to be implanted within the body, to recharge the latter from the former, said separable contact members including at least a first set of contact members adapted to be disposed on teeth of the body, and another set of contact members are sized and shaped for mounting on teeth of the body adapted to carry said first set of contacts, and the said leads adapted to be implanted within the body are adapted to extend from said first set of contacts through the root canals of the teeth intended to carry said contacts, and the other set of contacts are connected to the said leads which are disposed outside the body and extend to the said source of power outside the body.

3,842,441

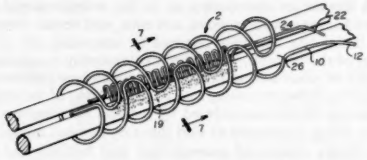
A TEMPORARY IMPLANT AND METHOD FOR TENDON SURGERY

Anthony J. Kaiser, 200 Carmen Ave., East Meadow, N.Y. 11554

Continuation-in-part of Ser. No. 297,145, Oct. 12, 1972, abandoned. This application Mar. 21, 1973, Ser. No. 343,581

Int. Cl. A61f 1/24

U.S. Cl. 3—1 **27 Claims**



1. A temporary implant for tendon surgery which comprises a generally cylindrical tube of a continuous yieldable filamentary material, said cylindrical tube having openings on the surface thereof defined by said filamentary material, said cylindrical tube being in the shape of an alternating and reversing helix which has a diameter between ⅛ and ¼ inch and a length between 1 and 4 inches.

3,842,442

ENDOPROSTHETIC SHOULDER JOINT

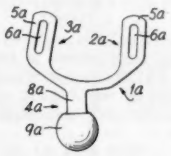
Reinhard Kolbel, Berlin, Germany, assignor to National Research Development Corporation, London, England

Filed Sept. 4, 1973, Ser. No. 394,247

Claims priority, application Great Britain, Sept. 4, 1972, 40969/72

Int. Cl. A61f 1/24

U.S. Cl. 3—1 **13 Claims**



1. An endoprosthetic shoulder joint device comprising a scapular component and a humeral component; the scapular component including a generally Y-shaped structure having two Y-arms and a Y-stem, said Y-arms being first fixation members, and said Y-stem being a first bearing member terminating at its free end in a substantially part-spherically shaped bearing surface; and the humeral component including a second bearing member having a substantially part-spherically shaped second bearing surface in mutual articulatory bearing engagement with said first bearing surface, and a second fixation member extending from said second bearing member remotely from said second surface.

3,842,443

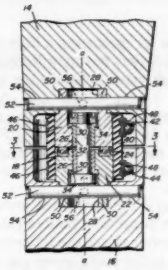
RESILIENT PIVOT JOINT FOR AN ARTIFICIAL LEG

Albert L. Weber, Appleton, N.Y., assignor to Lloyd J. Watkins, Lockport, N.Y., a part interest

Filed Aug. 30, 1972, Ser. No. 284,974

Int. Cl. A61f 1/08, 1/04

U.S. Cl. 3—2 **7 Claims**



1. A pivot joint for an artificial limb, comprising, in combination:

a. first and second joint segments;

b. means connecting the first and second joint segments together for pivotal movement relative to one another about a pivot axis;

c. a bearing member;

d. a recess provided in one of the first and second joint segments and arranged for receiving the bearing member, the bearing member being arranged in the recess;

e. resilient means including a sleeve arranged around the first and second joint segments for restoring same to a predetermined relationship with respect to one another following the application of a torsional force to the segments;

f. means for attaching the first and second joint segments to respective sections of a member to be pivotally joined together;

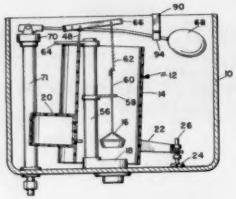
g. first and second clamping elements arranged for clamping the resilient means to the first and second joint segments, respectively; and

h. the first and second joint segments being provided with aligned apertures, the connecting means having a bolt arranged in these apertures and a nut threadingly engaging the bolt for retaining same, one of the joint segments having at least one slot provided in a wall thereof and communicating with an aperture provided in the joint segment, the aperture being dimensioned to receive an end of a length of tubing, and means arranged about the wall adjacent the slot for clamping the tubing in the aperture, the apertures provided in the joint segments each having two sections, the aperture section arranged closest to the other joint segment having a smaller area than the other aperture section of the same joint segment, and a shoulder being formed at the junction of the sections, and further including a hollow element provided with a flange and arranged in the smaller diameter aperture section with the flange abutting the shoulder.

3,842,444
BI-FLUSH TOILET APPARATUS

Henry W. A. Gruenhagen, 2030 Ebers St., San Diego, Calif. 92107

Filed May 21, 1973, Ser. No. 361,974
Int. Cl. E03d *1/34, 5/02*
U.S. Cl. 4—67 A 8 Claims



1. In an apparatus for producing a high volume flush and a low volume flush in toilets having a flush tank, flush control handle and flush ball valve, wherein the improvement comprises:

barrier means comprising a vertically extending water impervious sleeve for surrounding said flush ball valve and sealing against the bottom of said tank excluding a portion of the water in said tank from passing through said flush ball valve,

said barrier means is buoyant when immersed in water,

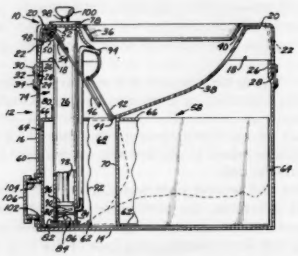
support means for permitting limited guided vertical movement of said barrier under the influence of the buoyancy of said barrier to lift said barrier out of sealing engagement with the bottom of said tank and permitting substantially all of the water in said tank above the level of said valve to pass under said barrier and through said valve,

latch means on said barrier for releasably securing said barrier in said sealing position.

3,842,445
FRESH WATER FLUSH PORTABLE TOILET

Sterling B. Jones, 858 Duff Ave., West Covina, Calif. 91790

Filed Oct. 5, 1972, Ser. No. 295,280
Int. Cl. E03d *11/10, 5/00*
U.S. Cl. 4—78 8 Claims



1. A fresh water flushing portable toilet, comprising:

a rigid commode having a hollow lower portion serving as a holding tank for sewage, and an upper portion formed with a toilet seat and provided with a depending bowl having an outlet to discharge into the holding tank;

a collapsible container for fresh water mounted within the holding tank;

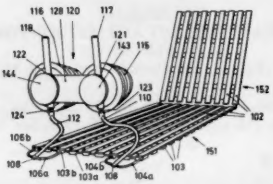
and pump means to withdraw fresh water from the container and discharge it into the bowl to flush the latter;

the container being adapted to collapse as the fresh water is withdrawn to provide displacement volume for the sewage and permit both fresh water and sewage to occupy the holding tank simultaneously without being intermingled.

3,842,446
DEVICE FOR DISTRIBUTING SUBSTANCES IN BATHING WATER OF A BATHING TUB

Hugo Hunhausen, Seelbachsecke 26, 5905 Freudenberg, and Vinzens Anton Ax, Marburgerstr. 49, 5901 Wilnsdorf-Gernsdorf, both of Germany

Filed June 21, 1972, Ser. No. 264,814
Int. Cl. A47k *3/00*
U.S. Cl. 4—180 11 Claims

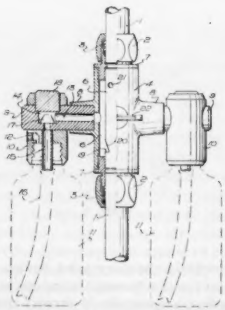


1. A device for distributing air in the water retained in a bathtub having a bottom, sides, and ends, said device comprising a lattice-like assembly adapted to removably set on the bottom of the bathtub, the lattice-like assembly comprising a plurality of tubes having fine bores, at least one bellows and means detachably mounting said bellows to one of the ends of the bathtub to be manipulated by the feet of a bather, said bellows being connected to said tubes by conduit means and valve means connected intermediate said bellows and said tubes, said valve means including a first valve part being operable to open upon said bellows being compressed to permit air to be pumped from said bellows to said tubes and a second valve part operable to close upon expansion of said bellows to prevent water from being drawn through said tubes to said bellows.

3,842,447
DEVICE FOR THE INTRODUCTION OF FLUENT MEDIUM INTO A MAIN FLOW OF LIQUID PASSING ALONG A CLOSED PASSAGE, SUCH AS A PIPE

George William Usher, 41 Harlech Rd., Leeds LS11, England

Filed Apr. 19, 1972, Ser. No. 245,367
Claims priority, application Great Britain, Apr. 21, 1971, 10524/71
Int. Cl. E03d *9/03*
U.S. Cl. 4—226 1 Claim



1. A device for introducing a fluent medium into water flowing to a washing shower, the device comprising a tube

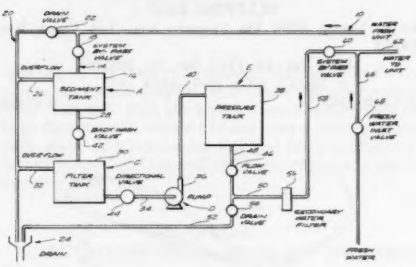
having connection means at each end whereby the tube can be connected into the supply pipe through which water flows to the exit port of the shower, a casing surrounding the tube and spaced therefrom whereby a mixing chamber is formed between the casing and tube, deflection means on the tube adapted to divert some of the water flowing in the supply pipe into the mixing chamber, the deflection means having a plurality of bleed off apertures in the tube, a portion of the tube wall adjacent to each aperture being indented relative to the remainder of the tube wall whereby some of the water flowing through the tube is diverted into the mixing chamber by the indented wall portion, the tube having at least one other aperture downstream of the deflection means which permits liquid in the mixing chamber to enter the tube and be entrained in the water flowing to the exit port of the shower, and means having a one way valve for permitting the fluent material to be injected through the valve into the mixing chamber.

3,842,448

APPARATUS FOR RECYCLING A FLUID FOR USE IN A DENTAL CUSPIDOR

Stuart L. Kahn, and Carl G. Langbert, both of 308 Raritan Ave., Highland Park, N.J. 08904

Filed Mar. 29, 1973, Ser. No. 345,976
Int. Cl. A61c *17/04*
U.S. Cl. 4—263 **9 Claims**



1. Apparatus for recycling a fluid for use in a dental cuspidor comprising a cuspidor bowl, a drain in said bowl, means for separating sedimentary material from said fluid, and separating means being in fluid communication with said drain, means for filtering said fluid, means for storing the filtered fluid under pressure and a cuspidor faucet in fluid communication with said pressure means for introducing the recycled fluid into said bowl.

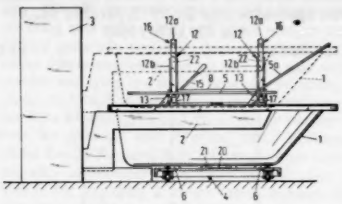
3,842,449

TRANSPORT APPARATUSES FOR BEDRIDDEN PERSONS

Johannes Theodorus Geurtsen, and Theodorus Johannes Antonius Geurtsen, both of Twello, Netherlands, assignors to Geurtsen B. V., Twello, Netherlands

Filed Aug. 7, 1973, Ser. No. 386,316
Claims priority, application Netherlands, Sept. 9, 1972, 7210872
Int. Cl. A47b *83/04*
U.S. Cl. 5—81 R **7 Claims**

1. An apparatus for the transport of a bedridden person, notably for the transport of a person from the bed to a bath or a shower closet and back to the bed, said apparatus comprising a carriage, a lifting device mounted on said carriage, a litter for carrying a person in a lying position, U-shaped bows adapted to be straddled on the longitudinal part of the brim of a bathing tub or the upper edge of a heightened splasher which is provided in the entrance opening of a relatively wide shower closet, the one legs of said bows being pivoted to said lifting device, horizontal bars extending transversely to the longitudinal direction of said litter to support same and being attached



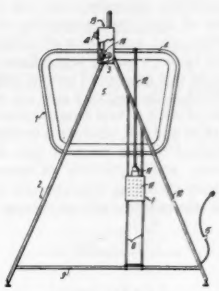
with their one ends to the ends of the other legs of said bows, said bars extending in line with the pivots of the connection between the bows and the lifting device.

3,842,450

OSCILLATING FURNITURE AND PLAYTHINGS

Mohammad Reza Pad, Nader St. Forooshgahe, Asady-Opposite Javid Garage, Shiraz, Iran

Filed Mar. 2, 1973, Ser. No. 337,645
Claims priority, application Iran, Apr. 3, 1972, 11051
Int. Cl. A47d *9/02*; H01f *7/12*
U.S. Cl. 5—109 **4 Claims**

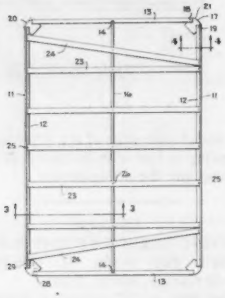


1. A piece of oscillating furniture comprising at least one device imparting an oscillating movement thereto, said device including first and second parts movable relative to one another, the first part comprising an electromagnet including a body and a hollow coil support, the second part comprising a core of ferromagnetic material engaged within and disposed axially of said coil support, an outer sheath of patent leather on said core, a glass lining on an inner surface of the coil support, said sheath being in frictional engagement with said lining, means for intermittently supplying electric current to the electromagnet after a change in the direction of oscillation of the piece of furniture to provide an impulse tending to oscillate it in a new direction of oscillation, said means comprising a blade switch, an oscillating control arm mounted on said piece of furniture, a member pivotally mounted on said arm towards a free end thereof and engageable with said blade switch, elastic return means acting on said member, said member being pivotable in one direction against the action of said elastic return means and a stop member limiting pivotal movement of said member relative to said arm in the other direction, said piece of furniture further comprising a chassis, bearings on said chassis, pivot means supported by said bearings, an oscillating body suspended by said pivot means, said pivot means actuating said oscillating control arm of the switch, one of said parts of the oscillating movement device being connected to said body and the other to said chassis.

3,842,451
MATTRESS SUPPORT ASSEMBLY

Robert A. McCormick, Indianapolis, Ind., assignor to McCormick Lumber Company, Inc., Indianapolis, Ind.

Continuation of Ser. No. 230,734, March 1, 1972, abandoned.
This application July 26, 1973, Ser. No. 382,827
Int. Cl. A47c *19/00*
U.S. Cl. 5—200 R 13 Claims



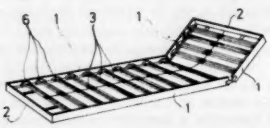
1. In a mattress support assembly, the combination comprising:

a pair of horizontally extending end rails parallel to each other, a pair of horizontally extending side rails parallel to each other, and a plurality of corner blocks, each corner block having a pair of vertically extending grooves therein, one of said grooves of each of said blocks receiving and affixed to the end of a side rail and the other of said grooves of each of said blocks receiving and affixed to the end of an end rail, whereby a complete rectangular frame is formed by the pairs of rails and plurality of corner blocks, and a plurality of spaced horizontally extending slats extending between said side rails at the tops of said side rails and affixed thereto.

3,842,452
BODY SUPPORTING FRAME STRUCTURE

Anton Arnoldus Kievits, Brussel, Belgium, assignor to S. A. Bekaert, Zwevegem, Belgium

Filed Aug. 24, 1973, Ser. No. 391,495
Int. Cl. A47c *23/06*, *19/00*
U.S. Cl. 5—237 7 Claims

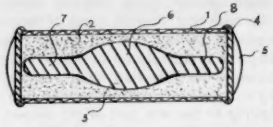


1. A body supporting furniture frame structure comprising two opposite longitudinal girders, a plurality of parallel cross-girders secured between said longitudinal girders, the longitudinal edges of each of said cross-girders being provided with a lengthwise aperture, and a wire or bar disposed through each of said lengthwise apertures, said wire or bar being convexly bent in the longitudinal direction of said cross-girders, said cross girders being constructed of flexible plastic material.

3,842,453
POSTURE PILLOW

Nadine Redfield, 1911 Ganyard, Houston, Tex. 77043

Filed Aug. 15, 1972, Ser. No. 280,828
Int. Cl. A47c *27/22*; A61f *5/00*
U.S. Cl. 5—340 4 Claims



1. In a posture pillow, a cover of fabric formed into a cylinder and having therein a core of rigid material, said core being diametrically enlarged at a point between its opposing termainals, and adapted to bear on the spine of the user at said point and being sharply reduced in diameter on each side of the transverse axis to conform to the contour of the shoulder blades of the user and a filling of flexible material surrounding said core.

3,842,454
SLEEPING BAG

John P. Young, 4000 Via Vaquero Ave., Las Vegas, Nev. 89102

Filed Nov. 10, 1972, Ser. No. 305,464
Int. Cl. A47g *9/00*; A01k *1/02*
U.S. Cl. 5—343 4 Claims

1. A sleeping bag comprising:

a frame having a lower rigid frame member comprising a rod extending substantially entirely around the periphery of the bag and an upper frame member comprising a rigid rod having opposite ends secured adjacent opposite sides respectively of the lower member, a pair of spring members attached along opposite sides of the lower member and secured adjacent the ends of the upper member for biasing the upper member upwardly apart from the lower member, and a cover comprising upper and lower covers the lower cover attached substantially along the lower frame member and the upper cover attached along the upper frame member to form a bag normally opened at one end between said upper and lower frame member and closed by urging the upper member downwardly.

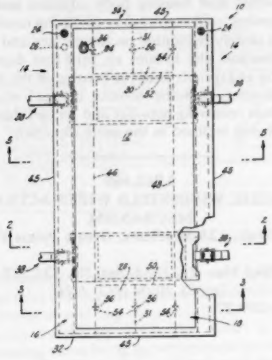
3,842,455
FLUID CONTAINING MATTRESS

John K. Whitney, Lennys Ln., Orchard Park, N.Y. 14127

Continuation-in-part of Ser. No. 213,605, Dec. 29, 1971, Pat. No. 3,802,004. This application June 28, 1973, Ser. No. 374,361
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB 3 Claims

1. A mattress for use with bed-ridden patients comprising: a patient supporting portion containing a fixed amount of

body supporting liquid and means associated with said patient supporting portion for changing the depth thereof without changing the amount of said fixed amount of liquid; said patient supporting portion having a head end and a foot end and being substantially rectangular in configuration and having a widened area comprised of two opposed sections each having the form of an elongated isosceles trapezoid adjacent said head end to accommodate the shoulder area of a patient; said rectangular patient support portion comprising a liquid-



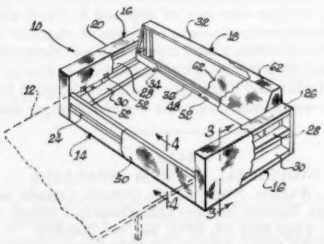
tight bag having at least one sealable fill opening; and wherein said means for changing the depth of said liquid comprises two pairs of air cells, each pair having a small diameter cell and a large diameter cell, one each of said pairs extending longitudinally along said rectangular bag and being operatively attached thereto, said widened areas being formed in said large diameter cells.

3,842,456

UPHOLSTERED FRAME MEANS FOR SOFA BEDS

Edward L. Bronstien, Jr., St. Paul, Minn., assignor to The United States Bedding Company, St. Paul, Minn.

Filed Jan. 8, 1973, Ser. No. 321,693
Int. Cl. A47c *27/04, 31/10*
U.S. Cl. 5—353.1 **8 Claims**



1. A sofa bed comprising

a collapsible metal bed frame assembly,

a substantially rigid, metal, sofa frame assembly, said sofa frame assembly including a sofa front metal frame portion, a sofa right side metal frame portion, a sofa left side metal frame portion and a sofa rear metal frame portion, metal flange portions formed on each of said metal frame portions,

means for covering said sofa frame assembly, said covering means comprising a cover fabric, said cover fabric including a first cover fabric portion covering said front metal frame portion and lying in a first generally vertically disposed plane, a second cover fabric portion covering said rear metal frame portion and lying in a second generally vertically disposed plane, a third cover fabric portion covering said right side metal frame portion and lying in a third generally vertically disposed plane and a fourth cover fabric portion covering said left side metal frame portion and lying in a fourth generally vertically disposed plane, and each of said fabric portions defining inturned portions extending to said metal flange portions,

means for securing said inturned fabric portions to said metal flange portions, said securing means comprising a plurality of resilient clips, each of said clips including means for engaging a cover fabric portion fitted into engagement with a metal flange portion and for providing a bias force to maintain said engaged cover fabric portion in a relatively stationary contacting engagement with one of said metal flange portions,

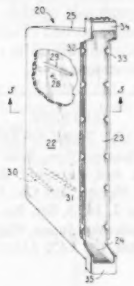
at least some of said metal flange portions being disposed on said metal frame portions of said sofa frame assembly out of the generally vertically disposed planes formed by their respective cover fabric portions such that said resilient clips are substantially hidden from view.

3,842,457

BEE FEEDER

Elliott C. Johnson, Stockton, Calif., assignor to Valley Honey Cooperative, Stockton, Calif.

Filed July 3, 1973, Ser. No. 376,160
Int. Cl. A01k *53/00*
U.S. Cl. 6—5 **12 Claims**

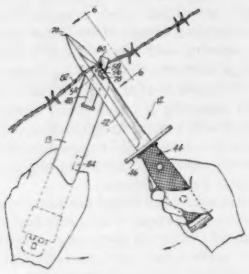


1. A synthetic resinous container for storage of bee food adapted to be disposed in a bee hive among brooder frames supported on rails in the bee hive, said container having bottom, sidewalls and end walls which combine to enclose a cavity having a top which is open for the entrance of bees from the hive, said bottom being narrower than the top, and a pair of brackets integral with the end walls of the container and adapted to be disposed on said rails to support the container in a bee hive, each of said brackets having a top wall integral with an end wall of the container, a second wall spaced outwardly from and substantially parallel with the end wall of the container depending from the top wall of the bracket, and a pair of spaced walls integral with and depending from the top wall of the bracket and integral at one end with the end of the container and at the other end with said second wall.

3,842,458
WIRE CUTTER BAYONET OR KNIFE

Russell E. Bauer, Grosse Pointe Shores, Mich., assignor to Bauer Ordnance Company, Warren, Ohio

Filed May 3, 1973, Ser. No. 356,779
Int. Cl. B25f *1/04*
U.S. Cl. 7—5.6 **23 Claims**

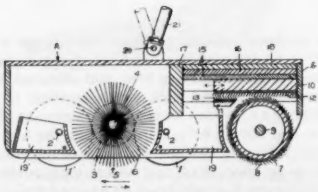


1. In combination a bayonet and a scabbard for carrying said bayonet comprising a handle portion and a blade portion, said blade portion having a relatively shallow notch formed at a relatively thick edge thereof proximate the end of said blade, an aperture through said blade in close proximity to said notch, said scabbard being in the form of a sheath having an open end and a closed end, a metallic elongated flat member having a portion projecting beyond an end of said sheath and having a face at least flush with a side surface of said sheath, a lateral relatively deep notch formed at a side edge of the projecting portion of said flat member, a pivot pin member projecting from said face of said flat member in close proximity with said notch, whereby by removing said bayonet from said scabbard and pivotally linking said bayonet and said scabbard by means of said pivot pin engaged in said aperture in said blade a cutter is formed for cutting a wire by engagement of said wire through said notches and by manual pressure applied on the handle portion of said bayonet and on the opposite end of said sheath such as to pivot said sheath and bayonet in opposite directions.

3,842,459
ROTARY TYPE SWEEPER

Teruya Tsuruzawa; Isamu Ohta, both of Suita; Muneyuki Ueda, Nishinomiya, and Kazuyuki Shimizu, Osaka, all of Japan, assignors to Nippon Seal Co., Ltd., Osaka, Japan

Filed May 2, 1973, Ser. No. 356,446
Claims priority, application Japan, May 2, 1972, 47-43873
Int. Cl. A47l *11/32*
U.S. Cl. 15—48 **5 Claims**

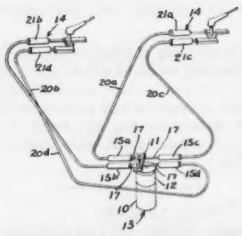


1. A rotary type sweeper, comprising: a housing body; a first conventional roller brush mounted within said housing body and being rotatable in engagement with the surface to be cleaned when the sweeper is moved forwardly and backwardly; dust collecting compartments disposed in front of and to the rear of said first roller brush; a second roller brush rotatably mounted within said housing body adjacent said first roller brush, said second roller brush having short bristles closely implanted on the surface and inclined in the same direction along the circumference thereof; a first dust removing member having short bristles closely implanted on the surface and inclined in the same direction and being positioned adjacent and movable in engagement with said second roller brush; a second stationary, dust removing member positioned within said housing body adjacent said first dust removing member, said second dust removing member having short bristles closely implanted on the surface and inclined in the same direction, the bristles on said first dust removing member being engageable with the bristles on the second dust removing member, and the bristles on said second roller brush, first dust removing member and second dust removing member all being inclined in the same direction.

3,842,460
HYDRAULIC WINDSHIELD WIPER ACTUATING MECHANISM

Hurst E. J. Wulf, 625 Middlesex, Grosse Pointe Park, Mich. 48230

Filed Mar. 27, 1972, Ser. No. 238,155
Int. Cl. B60s *1/12, 1/28*
U.S. Cl. 15—250.27 **12 Claims**



1. In a hydraulic windshield wiper actuating mechanism, a source of power, at least one pair of opposed hydraulically non-interconnected hydraulic drive cylinders of identical volume, a shaft connected to said source and interconnecting said drive cylinders, reciprocating drive means connected to said shaft, at least one pair of opposed hydraulically non-interconnected hydraulic slave cylinders of identical volume to said drive cylinders, a shaft connecting said slave cylinders, each of said slave cylinders connected by a hydraulic line to a drive cylinder, said pair of slave cylinders adapted to reciprocally drive a pivotally mounted windshield wiper assembly.

3,842,461
INDUSTRIAL VACUUM APPARATUS

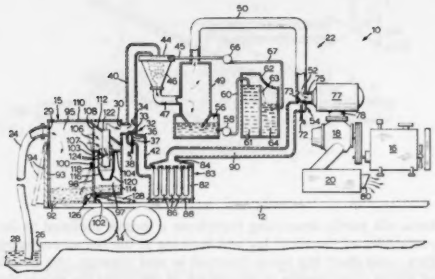
Wilfred A. Wurster, Niagara Falls, Ontario, Canada, assignor to Walkee Vacuum Services Ltd., Ontario, Canada

Filed May 15, 1973, Ser. No. 360,538
Int. Cl. B01d *50/00;* **B04c** *5/185;* **B01d** *47/00;* **B04c** *9/00;* **B01d** *46/00*
U.S. Cl. 15—326 **3 Claims**

1. A mobile vacuum unit, comprising a mobile frame, a collection box mounted on said mobile frame, a snorkel communicating with said collection box and adapted to draw air and entrained materials into said box through suction, said box being adapted at intervals to dump materials contained therein, an outlet from said box leading to a two-way separating valve;

a first conduit leading from said valve to the intake of a swirler unit having means for capturing air-entrained particles in a rotating stream of liquid, the outlet from

said swirler unit leading through a second conduit to the tangential inlet to a demister unit having an exhaust outlet for gas at the top and a collection chamber for liquid at the bottom, pump means for recirculating liquid from said collection chamber to said swirler unit to enter said rotating stream of liquid, a third conduit from said exhaust outlet to one inlet of a two-way combining valve;



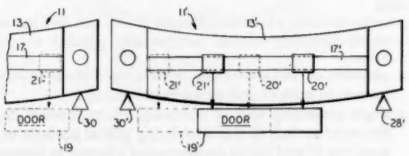
a fourth conduit leading from said two-way separating valve to the inlet of a bag filter unit, a fifth conduit leading from the outlet of said bag filter unit to the other inlet of said two-way combining valve, the outlet of said two-way combining valve being in communication with the inlet to a screen filter unit, the outlet of said screen filter unit communicating with the suction inlet of an air-pump, the outlet of said air pump exhausting through muffling means to the atmosphere, and means for powering said air-pump.

3,842,462

DEFLECTION COMPENSATING UNIFIED TWO PART TRACK FOR SLIDING DOOR AND METHOD OF MAKING SAME

Cecil Bainbridge, La Mesa, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Sept. 28, 1970, Ser. No. 75,972
Int. Cl. A47h 1/04
U.S. Cl. 16—94 **7 Claims**



1. A unified two part track for suspending a sliding door of known weight by a pair of hangers riding on, and spaced apart lengthwise of, the track for approximately straight line movement along one of the two track parts, said track comprising a first long narrow track part,

seat means extending lengthwise of the first track part and bowed by an amount calculated to compensate for deflection of the two part track caused by bowing forces exerted by such door suspended by its hangers from the track during movement between open and closed positions of such door along the track,

a second long, narrow track part shaped to receive the hangers for door supporting movement therealong and secured in seated relation to the seat means of the first track part whereby said second track part is bowed thereby an amount calculated to compensate for such deflection, and

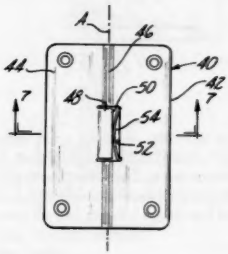
mounting means at each end of the track for supporting the track at its ends only to a supporting structure with said track extending transversely across an upper portion of, and at least at one end thereof laterally beyond, a door opening in such structure.

3,842,463

SPRING HINGE STRUCTURES

William C. Wehner, Inkster, Mich., assignor to Howard E. Crawford, Dearborn and Robert C. Hauke, Holly, both of Mich., part interest to each

Filed Oct. 17, 1972, Ser. No. 298,358
Int. Cl. E05d 11/08
U.S. Cl. 16—142 **16 Claims**



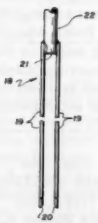
1. A spring hinge comprising a unitary plate separated into adjacent portions by a thin flexible joining section extending along a selected bend line for relative hinge motion of said plate portions around the axis of said bend line, said flexible joining section being interrupted by at least one partially cut-out tab formed integrally with one plate portion and severed from the other plate portion and extending across said bend line, said hinge having means cooperatively engaging said tab and said other plate portion to bias said plate portions toward a selected angular relationship.

3,842,464

MEAT TENDERIZING APPARATUS

John B. McCord, Evanston, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed July 18, 1973, Ser. No. 380,153
Int. Cl. A22c 9/00
U.S. Cl. 17—25 **5 Claims**



1. A yieldable-knife meat tenderizing apparatus particularly for meat that contains bones, comprising: a plurality of closely spaced, force yieldable sets of elongated knives with each knife having a sharp meat penetrating and meat severing sloped end, each said set comprising a reciprocable piston and a plurality of said knives on the piston with the knives in each set being substantially parallel to each other and to their said

piston and with the meat penetrating ends of the knives of each set being adjacent to but separate from each other; and force yieldable means independently retaining each said set of elongated knives in meat penetrating position.

3,842,465

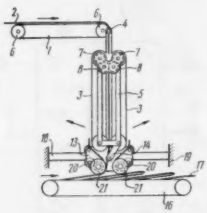
APPARATUS TO FORM FIBROUS LAPS FROM WEBS

Argo Aleksandrovich Sillaots, Ekhitayate tee, 86 - 24; Nikolai Ivanovich Kuuse, bulvar Sypruse, 5 - 168; Toenu Romanovich Randmaa, Julemiste tee, 7 - 6, and Villo Johannesovich Loo, Tammsaare tee, 107 - 96, all of Tallin, U.S.S.R.

Continuation of Ser. No. 93,282, Nov. 27, 1970, abandoned. This application Jan. 9, 1973, Ser. No. 322,194

Int. Cl. D04h 11/04

U.S. Cl. 19—163 **1 Claim**



1. An apparatus for continuously forming a fibrous lap from webs, comprising; a delivery conveyor for said webs mounted on a pair of rotatable drums, said drums being located in spaced relationship in a common horizontal plane and fixed against translational movement; a pair of vertical conveyors having the upper ends thereof positioned adjacent the outlet end of said delivery conveyor, said vertical conveyors having a predetermined clearance therebetween so as to facilitate passage therethrough by said webs; a further conveyor located below said vertical conveyors for withdrawing the formed lap of said webs conveyed between said vertical conveyors; an oscillating frame mounting said vertical conveyors and being rockable relative to an axis laying in the plane of the geometrical axes of said drums at a tangent to the outlet end of said delivery conveyor and along said withdrawing conveyor for laying said webs on said last-mentioned conveyor in the logitudinal direction thereof; a pair of positively rotated compacting rolls; carriage means mounting said compacting rolls for horizontal movement below said vertical conveyor; hinge means having a projecting portion being fastened to the lower end of said oscillating frame, said carriage means having a generally vertically extending slot formed therein for receiving said projecting portion so as to hingedly connect said carriage means to said oscillating frame whereby, during rocking motion of said frame about said axis there is relative vertical movement between said carriage means and the lower end of said vertical conveyors and said carriage means is movable in the same direction as said withdrawing conveyor.

3,842,466

CLIP ATTACHMENT FOR WRITING INSTRUMENTS OR THE LIKE

Otto Katz, Schwabach, and Werner Kranich, Rosstal, both of Germany, assignors to A. W. Faber-Castell, Nurnberg, Germany

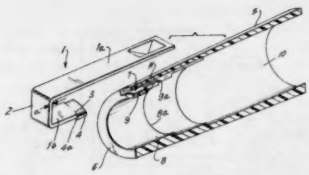
Filed July 27, 1973, Ser. No. 383,446

Claims priority, application Germany, Aug. 2, 1972, 2237946

Int. Cl. B43k 25/00; B29f 1/00

U.S. Cl. 24—11 F **4 Claims**

1. In a writing instrument or the like, a combination comprising a tubular member provided in the wall thereof with an elongated passage extending in axial direction of the tubular member from one end thereof in said wall, said passage opening at the inner end thereof into the interior of the tubular member so as to form at its inner end an abutment face; and a U-shaped clip having a long and a short leg and provided spaced from the free end of the latter with at least one transverse slit partly separating therefrom a tongue inclined to the remainder of the short leg and forming at the slit an engaging face, said short leg being inserted in said passage, the length of which corresponds to the length of the short leg minus the width of said tongue so that the clip is anchored in said passage by engagement of said engaging face with said abutment face.



3,842,467

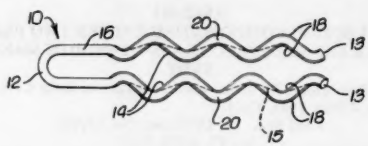
HELICAL ELEMENTS FOR A LINE CONDUCTOR

Motoyasu Konishi, 3-4-18 Nakata, Tarumi-ku, Kobe, Japan

Filed June 14, 1972, Ser. No. 262,664

Int. Cl. F16g 11/00

U.S. Cl. 24—131 C **9 Claims**



1. A helical element for supporting a line conductor, comprising:

a linear element which is U-shaped at one end and has two prong members spaced substantially parallel to each other;

a plurality of helixes having undulating helical portions formed in both of said prong members; and

a single projecting spur of continuous form formed along the inner surface of said undulating helical portions of at least one of said prong members and adapted to intersect the axis of said line conductor when the helical element is wrapped around said line conductor, said projecting spur undulating longitudinally along said undulating helical portions.

3,842,468

METHOD AND APPARATUS TO PREVENT MELTED YARN WHEN STOPPED IN A HIGH TEMPERATURE YARN TEXTURING JET

David Malcolm Harrison, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,278

Int. Cl. D02g 1/16

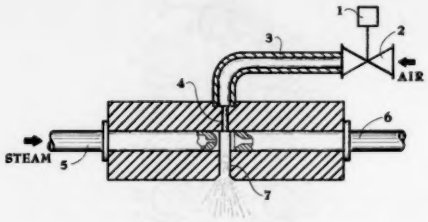
U.S. Cl. 28—1.4 **4 Claims**

1. A method to prevent melted yarn when stopped in high temperature yarn texturing jet device having a high temperature fluid flowing across the yarn entry comprising

sensing yarn stoppage with a sensor, and

actuating a valve in a high pressure fluid conduit communicating with an orifice opposite said yarn entry in said texturing jet device, and

diverting and diluting any undiverted said high temperature fluid flowing across said yarn entry out of said texturing



STEAM-AIR MIXTURE

jet device through said yarn entry with said high pressure fluid

so that elements in said texturing jet device downstream from said yarn entry are no longer heated by said high temperature fluid.

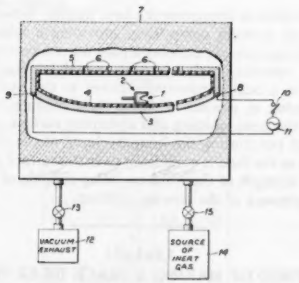
3,842,469
METHOD OF ACTIVATING ELECTRON EMISSIVE ELECTRODES

Richard A. Menelly, Danvers, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 200,398, Nov. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 150,310, June 7, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,833

Int. Cl. H01j *9/00*

U.S. Cl. 29—25.11 **7 Claims**



1. A method of providing an electrode for an electron emissive device wherein the electrode has improved electron emission characteristics, comprising the steps of:

selecting an electrode formed by an exothermic reaction between a refractory metal powder and an alkaline earth peroxide;

heating said electrode in an oxygen free environment to a temperature exceeding 525°C and less than the vaporization temperature of the electrode constituents until the electrode is rendered oxygen deficient;

cooling said electrode in the oxygen free environment to room temperature; and

exposing the electrode to atmosphere.

3,842,470
TOOL HOLDER FOR A CUTTING TOOL

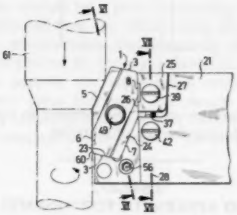
Karl Hertel, Oedenberger Strabe 29, Nuernberg, Germany

Filed Feb. 26, 1973, Ser. No. 335,652

Claims priority, application Germany, Mar. 7, 1972, 2210816

Int. Cl. B26d *1/00*

U.S. Cl. 29—98 **16 Claims**



1. A tool holder for a generally rhombic turning tool bit, having a pair of parallel main cutting faces, a pair of parallel subsidiary cutting faces, arranged at an obtuse angle to the main cutting faces, parallel end faces blunting the acute angles of the rhombic tool bit and parallel upper and lower faces, said holder comprising, in combination:

a. a tool holder body;

b. means defining an open sided tool bit receiving recess in the tool holder body;

c. a floor of said recess engageable by the lower face of the tool bit;

d. an end wall of the recess engageable by one of the end faces of the tool bit;

e. a side wall of the recess engageable by one of the main cutting faces;

f. an adjustable stop mounted adjustably on the body for pivoting about an axis which is substantially perpendicular to said floor of said recess, said adjustable stop includes a first component adjustably securable in said recess, and a second component mounted on said first component and having a curved face forming an arc of a circle and conforming to a complementary concave face on said first component;

g. an abutment face provided on said second component, said abutment face forming a wall of the recess and being engageable by one of the cutting faces and arranged at an acute angle to said side wall; and

h. means to clamp a tool bit on the tool holder against at least the end and side walls of the recess.

3,842,471
COMPOSITE ROLL

Karl Olof Polhall; Lennart Nordstrom, and Rolf Persson, all of Smedjebacken, Sweden, assignors to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed July 9, 1973, Ser. No. 377,459

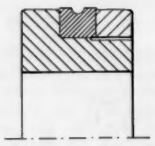
Claims priority, application Sweden, July 7, 1972, 9009/72

Int. Cl. B21b *31/08*

U.S. Cl. 29—125 **15 Claims**

1. A composite roll comprising an inner member, at least one rolling ring member of a hard wear-resistant material encircling said inner member, said inner member having a supporting wall on either side of the rolling ring member, said supporting walls applying compressive axial forces against the opposite surfaces of said rolling ring member to establish compressive stresses in the rolling ring member, at least one of said supporting walls being secured to said inner member

by means of a force-fit, said supporting wall members applying a compressive force to said rolling ring member which is



sufficient to cause the rolling ring member to rotate with the inner member during shaping of material.

3,842,472

METHOD AND APPARATUS FOR ASSEMBLING BALL BEARINGS

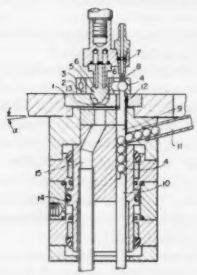
Walter Rottacker; Frieder Kordowich, both of Stuttgart, and Karl Hettich, Wolfsolten, all of Germany, assignors to SKF Industrial Trading and Development Company B. V., Amsterdam, Netherlands

Filed July 9, 1973, Ser. No. 377,203

Claims priority, application Germany, July 7, 1972, 2233378

Int. Cl. B23p *11/00, 19/04*

U.S. Cl. 29—148.4 A **10 Claims**



1. Method for assembling ball bearings comprising the steps of supporting the inner and outer race rings of a ball bearing one within the other, shifting one ring eccentrically with respect to the other to form a crescent-shaped space between the rings, and feeding a plurality of balls from beneath the bearing rings to the crescent-shaped space.

3,842,473

BEARINGS

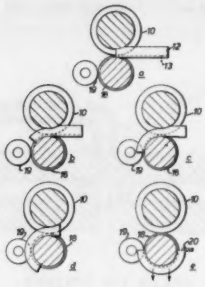
Neale S. Couper, Darvel, Scotland, assignor to The Glacier Metal Company, Limited, Middlesex, England

Continuation of Ser. No. 210,963, Dec. 22, 1971, abandoned. This application July 31, 1973, Ser. No. 384,262

Int. Cl. B21d *53/10, 5/08*

U.S. Cl. 29—149.5 C **11 Claims**

1. A method of manufacturing an arcuate plain bearing having a journal surface and a side flange comprising feeding a metal blank between a pair of rollers contoured to form the flange, the rollers being driven at speeds such that part of one roller corresponding to the edge of the flange and part of the other roller corresponding to the journal surface move at respective linear speeds in proportion to the radii of the journal surface and the edge of the side flange, to form the bearing with the arcuate shape without slipping between the rollers



and respective contacting surfaces of the edge of the flange and the journal surface.

3,842,474

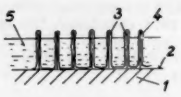
HEAT TRANSFER BETWEEN SOLIDS AND FLUIDS UTILIZING POLYCRYSTALLINE METAL WHISKERS

Hermann J. Schladitz, 74 Plaentschweg, Munich, Germany

Filed Nov. 21, 1972, Ser. No. 308,433

Int. Cl. B21d *53/02;* **B23p** *15/26*

U.S. Cl. 29—157.3 A **12 Claims**



1. A method of improving the heat transfer between a solid and a fluid medium comprising, providing a solid having a surface cooperating in defining a path for conducting the fluid medium, attaching polycrystalline metal whiskers of great strength in a heat conducting manner to the surface of the solid coming in contact with the fluid medium to thereby increase the heat emitting and absorbing surface area of the solid, and penetrating the boundry layer of the fluid by the whiskers as the fluid is conducted over the surface of the solid with the strength of the whiskers being capable of withstanding the pressure of the flowing medium.

3,842,475

METHOD OF MAKING A TRACK IDLER WHEEL

Thomas Clasper, Belmont; Wilfred H. Hutton, Ryton-on-Tyne, both of England; Orville E. Kessinger, Jr., Mackinaw; Victor Randour, Aurora, and Fred E. Simpson, Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

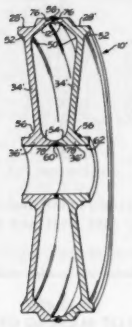
Division of Ser. No. 191,597, Oct. 22, 1971, Pat. No. 3,771,843. This application July 12, 1973, Ser. No. 378,677

Int. Cl. B21d *53/26;* **B21k** *1/28*

U.S. Cl. 29—159 R **7 Claims**

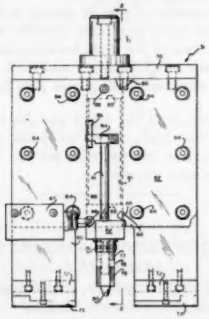
1. A method of making a heavy-duty track idler wheel including two formed discs that have integrally formed outer rims and inner bosses concentrically abutting each other and joined by circumscribing weld joinis comprising the steps of: making a wheel disc in the general shape of a wheel half with axially extending outer rim and inner boss portions, and a generally radially directed wall joining the rim and boss portions,

repeating the step to produce a second wheel disc,
placing said first and second wheel discs in side-by-side abutting relationship with the rim and boss portions in contact,



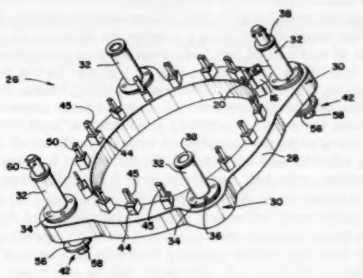
machining a centrally disposed wheel bore through said first and second wheel discs,
forming chamfers on said wheel discs prior to and in order to facilitate welding,
and welding said wheel discs together at their points of contact in said chamfers.

3,842,476
MULTI-OPERATIONAL PUNCH
John F. Prince, 6136 Crestview Dr., North Syracuse, N.Y. 13212
Filed June 12, 1973, Ser. No. 369,267
Int. Cl. B21d *53/36*; B23p *11/00*
U.S. Cl. 29—200 B **1 Claim**



1. A punch and die combination for performing a plurality of operations assembling a mine bolt expansion shell, the shell having a half secured at either end of a connecting strap and a wedge nut, the strap being bent substantially U-shaped on either side of the nut for holding the shell together, the shell halves having tongues bent over by a staking operation to secure them to the straps and requiring trueing by a coining operation, the bending into U-shape of the strap constituting the assembly operation; the die having a platform with an elongated recess for receiving a partially bent strap and recesses for receiving the shell halves at either end of the strap, the platform being supported on springs, each shell half recess having a base supported portion for staking the tongues, the elongated recess having a spaced pair of members at its center; the punch having press portions for forcing the shell halves against the die and a ram portion for forcing a wedging nut at the center portion of the strap down between the spaced members for bending the strap U-shaped, the punch being adapted to be carried by a press for forcing the shell halves against the die and then for withdrawing the press portions, independent motor means for advancing the ram portion against the wedge nut for forcing it down and then withdrawing the ram portion, the independent motor means being secured to the press portion of the punch, and means for automatically initiating operation and withdrawal of the second motor means upon withdrawal of the press portion of the punch.

3,842,477
CUTTER BLADE CHANGING APPARATUS
Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.
Filed Aug. 27, 1973, Ser. No. 391,710
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 D **16 Claims**

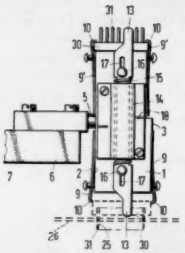


1. A combination for changing blades in a face-mill type cutter head, said blades being removably held in cartridges, and said cutter head having mounting means
for receiving a plurality of said cartridges, and
for holding the cartridges so that the cutting edges of said blades extend above the face surface of the cutter head and are oriented in predetermined precisely-spaced relationship, said combination including a blade-changing device comprising:
a base member;
a plurality of supporting means spacially oriented on said base member, said supporting means being adapted to receive and support said cartridges in a spaced relationship corresponding to the relationship in which said cartridges are held on said cutter head; and
alignment means for cooperatively engaging said cutter head when moved into properly-oriented contact therewith to position said supporting means in predetermined relationship to the mounting means of the cutter head,
whereby, when said blade-changing device is in properly-oriented contact with the cutter head, cartridges supported by respective ones of said supporting means may be slipped, without reorientation, from said supporting means onto the mounting means of said cutter head.

3,842,478
DEVICE FOR REMOVING COMPONENTS CONNECTED TO A CIRCUIT BOARD

Karl Schreckeneder, Muenchen, Germany, assignor to Siemens Akteingesellschaft, Berlin, Munich, Germany

Filed Sept. 17, 1973, Ser. No. 397,885
Claims priority, application Germany, Sept. 22, 1972, 2246732
Int. Cl. H05k 13/04; B23p 19/04; B25b 27/02
U.S. Cl. 29—203 B 10 Claims



1. In a device for removing a component of small dimensions from a carrier plate, the component being connected to the carrier plate by connecting elements which project through openings in the carrier plate and are attached to conductors thereon by solder joints, said device comprising a tong-like tool having a pair of legs interconnected at a pivot point, means for gripping a component disposed on an end of one of said pair of legs and a heating head being disposed on an end of the other of the pair of legs and having bores in a face for receiving the solder joints applying heat to the solder joints of the component, the improvement comprising the means for gripping including a housing, at least one pair of gripping elements mounted on opposite surfaces of the housing adjacent one end surface thereof with a free end of each element extending passed the end surface for engaging the component to be removed from the carrier plate, at least one member mounted on said housing with the end of each member being movable between a first position extending passed the free ends of the gripping elements to a second position adjacent the free ends, and means biasing said member to said first position so that when the pair of gripping elements engages a component and the solder joints connecting the connecting elements of the component to the carrier plate are liquefied by the heating head and said member engages the surface of the carrier plate, said biasing means acting on said member urges the housing away from the carrier plate to withdraw the connecting elements of the components from the openings in the carrier plate.

3,842,479
COLLAR ASSEMBLY FOR USE WITH A RIVET AND METHOD OF ASSEMBLING A JOINT

Glenn R. Willey, Santa Ana, Calif., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

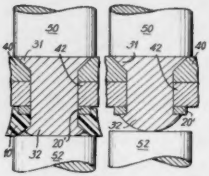
Division of Ser. No. 883,755, Dec. 10, 1969, Pat. No. 3,733,958. This application Feb. 8, 1973, Ser. No. 330,529
Int. Cl. B23p 17/00
U.S. Cl. 29—423 5 Claims

1. A method of forming a joint comprising:

a. providing a stack of structural members having aligned apertures therein;

b. inserting a rivet in said apertures so that a shank portion of the rivet projects beyond the outer surface of an outermost one of said structural members;

c. providing a collar assembly comprising a breakable collar retaining a metal collar and placing the collar assembly on the projecting shank portion of said rivet;

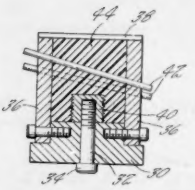


d. applying a force axially of the rivet to upset the projecting shank portion of said rivet and break said breakable collar.

3,842,480
METHOD OF MAKING GUIDE FOR ELECTROCHEMICAL DRILLING

Walter E. Mikulski, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 28, 1973, Ser. No. 374,610
Int. Cl. B23p 17/00
U.S. Cl. 29—423 3 Claims



1. In the manufacture of a guide block for electrodes in electrochemical drilling, the steps of:

positioning a plurality of pins in spaced walls of a mold in predetermined relation to one another and a mounting fitting on the base of the mold between said spaced walls, casting a plastic block between said walls and around the pins and the mounting fitting, said pins forming passages therein,

removing the pins from the block and the walls,

removing the cast block from the walls and positioning dielectric tubes in the passages formed by the pins for guiding electrodes therein.

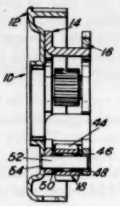
3,842,481
METHOD OF MAKING PLANETARY CARRIER ASSEMBLY

James Morrison Laing, Longmead, England, assignor to Borg-Warner Limited, Hertfordshire, England

Division of Ser. No. 37,795, May 15, 1970, Pat. No. 3,667,324. This application Mar. 22, 1972, Ser. No. 237,218
Int. Cl. B23p 19/00
U.S. Cl. 29—434 2 Claims

1. A method of manufacturing a planetary carrier comprising the steps of (1) forming a plate member, a spacer member and a support plate of sheet metal; (2) welding said sheet metal plate member to said sheet metal spacer at one end of said spacer; (3) welding said support plate to said spacer at the other end thereof; (4) forming aligned apertures through said spacer member, plate member and support plate; (5) assem-

bling pinion supporting shafts on which are mounted planetary pinion gears in said assembly; and (6) securing said shafts in said assembly by deforming said sheet metal plate member in



the area near the ends of said shafts to provide portions of said sheet metal plate on either side of said shafts which overlie the ends of said shafts.

3,842,482

METAL FITTINGS TO THERMOPLASTIC COMPONENTS

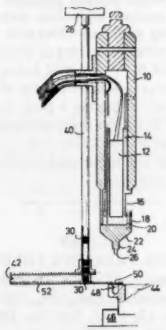
Ronald Bertram Stephens, Beverley, England, assignor to Armstrong Patents Co. Limited, Yorkshire, England

Filed Feb. 5, 1973, Ser. No. 329,556

Claims priority, application Great Britain, Feb. 16, 1972, 7060/72

Int. Cl. B23p *11/02*; B23q *7/10*

U.S. Cl. 29—447 **8 Claims**



1. A method for applying metal fittings to thermoplastics components, comprising the steps of forming a metal fitting with at least one reduced end region constituting a leading end intended for offering to a thermoplastics component, preforming a pilot hole in the thermoplastics component to a transverse dimension or dimensions capable of accepting and preliminarily locating the leading end of a metal fitting therein, introducing said end of such fitting into said pilot hole with the opposite end of the fitting upstanding from said thermoplastics component, applying heat directly to said fitting to effect a local softening of the thermoplastics material around said hole, exerting a mechanical pressure on said fitting sufficient to cause at least the region of said fitting adjoining said leading end to penetrate into said component, and thereafter cooling or allowing the softened thermoplastics material to cool and harden thereby securing said fitting in said component.

3,842,483

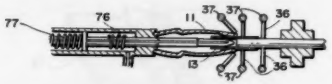
METHOD AND APPARATUS FOR MOUNTING A SLEEVE ON A COMBINED FERRULE AND ELECTRICAL CONDUCTOR

William H. Cramer, 1598 N.E. 104th St., Miami Shores, Fla. 33153

Filed Sept. 10, 1973, Ser. No. 396,120

Int. Cl. B23p *19/02*

U.S. Cl. 29—450 **5 Claims**



1. The method of mounting a resilient sleeve on a ferrule secured to the end of an electrical conductor comprising gripping said metal ferrule and said conductor at various positions along their length, placing said sleeve in substantial axial alignment with said ferrule, pushing said sleeve toward said ferrule, expanding said resilient sleeve by fluid under pressure, continued pushing of said sleeve over said ferrule and causing said individual gripping forces to swing away from said ferrule and said conductor onto said sleeve in sequence as said sleeve slides over said ferrule and said conductor and discontinuing the flow of fluid under pressure whereby said sleeve resumes its normal size to become firmly positioned on said ferrule and said conductor.

3,842,484

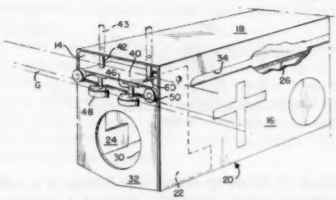
METHOD OF CONSTRUCTING A MOVABLE BULKHEAD

Robert Stark, 735 N.E. 198th, Seattle, Wash. 98155

Filed June 4, 1973, Ser. No. 366,627

Int. Cl. B23p *21/00*

U.S. Cl. 29—469 **5 Claims**



1. A method of constructing submersible bulkheads for swimming pools comprising

forming an elongated open-top open-ended box of resin material,

adding end-supporting hardware to the ends of the box,

forming a transverse shelf along the length of the box spaced closely from the closed bottom of the box,

adding a top to the box to close the open-top,

adding ends to close the open ends, and inverting the box for installation into a swimming pool.

3,842,485

METHOD OF MAKING AN EXPLOSIVELY WELDED SCARF JOINT

Laurence J. Bement, Newport News, Va., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 1, 1972, Ser. No. 302,681

Int. Cl. B23k *21/00*

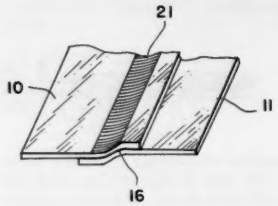
U.S. Cl. 29—470.1 **10 Claims**

1. A method of joining metal members in a scarf joint with

minimum edge overlap without attendant difficulty in shaping, alinement and preparation of the part which consist of:

providing two members to be joined;

placing said members so that each has one surface overlapping a surface of the other member at the area to be bonded;



applying directed forces from opposite sides of said overlapped members in the area of overlap;

partially offsetting said directed forces to cause a portion but not all of each force to counteract the other;

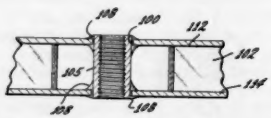
thereby bonding the members together metallurgically while bending the two overlapping members to form the major portions of the members into one plane.

3,842,486

METHOD OF INSTALLING ATTACHMENT FITTINGS IN CELLULAR MATERIAL

Milan E. Gerard, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 6, 1973, Ser. No. 386,068
Int. Cl. B23k *31/02*
U.S. Cl. 29—481 **10 Claims**



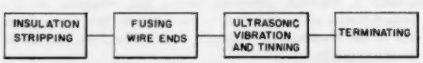
1. A method of installing attachment fittings in a cellular material sandwich which comprises: forming a hole in said material to receive said attachment fitting; placing a fitting into said hole, said fitting having an outside diameter corresponding to the diameter of said hole, and said fitting being coated on its exterior surface with a thermoplastic material; and melting said coat to form fillets which connect said fitting to said cellular material sandwich.

3,842,487

TERMINATING OF ELECTRICAL CONDUCTORS

Marvin E. Hartz, Grosse Pointe Farms, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Oct. 18, 1971, Ser. No. 189,980
Int. Cl. H01r *5/04*; **B23k** *35/12*
U.S. Cl. 29—503 **10 Claims**



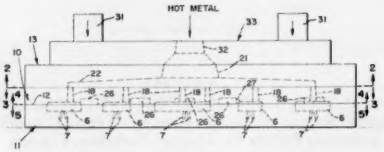
1. A method of terminating an electrical conductor formed of a bundle of strands of conductive metal twisted so that all of said strands are engaged with one another over the length of said conductor, said method comprising fusing the ends of the strands to form a solid tip at least at one end of said conductor; immersing said one end of said conductor in a bath of molten, electrically conductive metal having a temperature lower than the melting temperature of the metal of said strands; vibrating said one end of said conductor at a frequency sufficient to abrade oxides from the immersed end of said conductor and to coat the immersed end of said conductor with said molten metal; removing the coated end of said conductor from said bath; and solidifying the metal of the coating.

3,842,488

PROCESS FOR INLAYING POURED METAL IN WOOD

Byron V. Mitchell, 17554 Meekland Ave., Hayward, Calif. 94541

Filed July 2, 1973, Ser. No. 375,895
Int. Cl. B23p *17/04*
U.S. Cl. 29—527.6 **11 Claims**



1. A process for inlaying molten metal in a prepared but uncoated wood surface cavity consisting of:

a. forming a cavity in the surface of a wood member;

b. placing a quantity of RTV material outside said cavity and against the wood surface adjacent said cavity sufficient to prevent contact of molten metal with said wood surface and having sufficient thickness to rapidly absorb enough heat to prevent charring or burning of the surface of said wood, said RTV material being capable of withstanding temperatures well in excess of 700° F;

c. pouring molten metal having a pour temperature of approximately 700° F. or less into said cavity and permitting said metal to cool and solidify; and

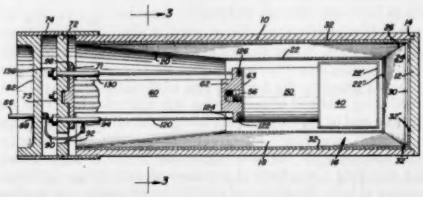
d. sanding said wood and metal and wood surface until both are at the same elevation.

3,842,489

PROCESS FOR TREATING THERMOPILE

Thomas Stratton Bustard, Ellicott City, Md., assignor to Nuclear Battery Corporation, Columbia, Md.

Filed Oct. 18, 1971, Ser. No. 189,841
Int. Cl. B01j *17/00*
U.S. Cl. 29—575 **5 Claims**



being composed of a plurality of small cross section, elongated, parallel, semiconductor elements, each element being separated from its adjacent element by means of a thin electrically insulating film, adjacent ends of selected pairs of adjacent elements being electrically connected to one another by means of a wire weld brazed to said adjacent ends, said plurality of thermoelectric elements forming a single series electrical circuit, said thermopile including terminal wires weld brazed to the ends of the two thermoelectric elements on the outside of the series circuit, said thermoelectric elements made from materials selected from the group consisting of Bi_2Te_3, Sb_2Te_3, Bi_2Se_3, Sb_2Se_3 and solid solutions and alloys thereof, said wires and terminal wires made from a material selected from the group consisting of palladium, gold, nickel, gold-plated nickel, and gold 92 percent-palladium 8 percent, said process comprising applying pressure to the ends of the thermopile and simultaneously applying across the terminal wires of the thermopile a capacitance discharge pulse, the extent of the pressure and the length and duration of the capacitive discharge pulse being sufficient to substantially heal the defects and irregularities in the pile.

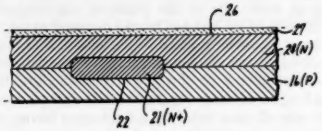
3,842,490
SEMICONDUCTOR STRUCTURE WITH SLOPED SIDE WALLS AND METHOD

Alan Seales, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 135,893, April 21, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,904

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **13 Claims**



1. In a method for fabricating a structure on a surface of a semiconductor body of one conductivity type, providing a first layer of a first material having a first etch rate on the surface of the body, providing a second layer of a second material having a second etch rate on said first layer, forming an etch resistant mask over said second layer having a pattern of openings therein exposing areas of said second layer through said openings, applying an etch through said openings which attacks said first and second materials to form openings in said first layer exposing the surface of the semiconductor body and so that said openings are defined by side walls in the first layer having an angle of less than 70° with respect to said surface, removing said mask and said second layer of said second material, forming through at least one of said openings on said first layer a region of opposite conductivity type in said semiconductor body to thereby produce a PN junction in said semiconductor body and forming contact metallization in said openings and on said sloped side walls adjacent to said one opening whereby the thickness of the metallization is relatively uniform throughout.

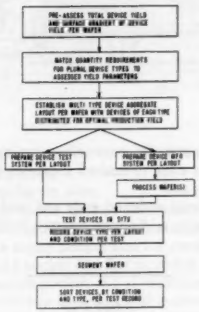
3,842,491
MANUFACTURE OF ASSORTED TYPES OF LSI DEVICES ON SAME WAFER

Arthur H. Depuy, Essex Center, Vt.; Leonard F. Johnson, and Stanley Scheinberg, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,366

Int. Cl. B01j *17/00*; **H01l** *5/00*

U.S. Cl. 29—580 **3 Claims**


PRE-ASSESS TOTAL DEVICE YIELD AND SURFACE GRADIENT OF DEVICE YIELD PER WAFER
MATCH QUANTITY REQUIREMENTS FOR PLURAL DEVICE TYPES TO ASSESSED YIELD PARAMETERS
ESTABLISH MULTI TYPE DEVICE AGGREGATE LAYOUT PER WAFER WITH DEVICES OF EACH TYPE DISTRIBUTED FOR OPTIMAL PRODUCTION YIELD
PREPARE DEVICE TEST SYSTEM PER LAYOUT
PREPARE DEVICE APPLICATION SYSTEM PER LAYOUT
PROCESS WAFER(S)
TEST DEVICES IN SITU
RECORD DEVICE TYPE PER LAYOUT AND CONDITION PER TEST
SEGMENT WAFER
SORT DEVICES BY CONDITION AND TYPE, PER TEST RECORD

1. A method of efficiently making predetermined quantities of each of a plurality of distinct types of differently structured LSI device units from a segmented wafer of predetermined form and composition comprising:

preparing a layout, representing a mapping of multiple devices of each said type upon a specific surface portion of said wafer having substantially uniform yield characteristics throughout the area thereof, said mapped devices arranged in a predetermined intermixed distribution of said types;

processing and segmenting said wafer in accordance with said layout to yield plural devices of each said type, including both operative and inoperative devices; the anticipated yields of operative devices of each said type being equal to or in excess of predetermined requirement numbers pre-specified for the respective types due to said intermixed distribution.

3,842,492
METHOD OF PROVIDING CONDUCTOR LEADS FOR A SEMICONDUCTOR BODY

Djuurd Anne Geertruid Kamerbeek, and Johannes Theodorus Van De Water, both of Mollenhutseweg, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,114

Claims priority, application Netherlands, Dec. 17, 1970, 7018378

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **7 Claims**

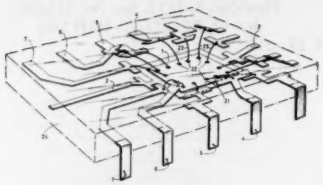
1. A method of providing conductor leads for a semiconductor body, comprising:

forming a spaced pattern of conductor leads having a first supporting strip connecting the ends of said leads intended to be remote from the semiconductor body and having a second supporting strip connecting the other ends of said strips intended to be electrically connected to said semiconductor body;

severing said second supporting strip into segments, each segment thereof being connected to an individual conductor lead, thereby forming widened ends for said conductor leads to assure rigid support for said other ends of said leads upon encapsulation thereof;

increasing the physical separation between adjacent edges of adjacent widened ends formed by said severing by moving at least one of each of said adjacent edges relative to the other of said adjacent edges;

positioning said widened ends adjacent said semiconductor



body and electrically connecting conductive wires from said widened ends to desired locations on said semiconductor body; and

encapsulating said widened ends and said connecting conductive wires to said semiconductor body in an insulating encapsulant.

3,842,493

METHOD OF MANUFACTURING A STATOR CORE FOR ROTARY ELECTRIC MACHINES

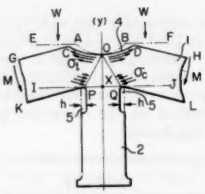
Yasushi Ohuchi, Hitachi; Toshiyuki Ebine, Katsuta; Takefumi Ohwada, Hitachi, and Ryozo Tomozaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 26, 1972, Ser. No. 275,154

Claims priority, application Japan, July 30, 1971, 46-56746

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **3 Claims**



1. A method of manufacturing a stator core for rotary electric machines comprising the steps of:

stamping a steel strip to form equally spaced slots on one side thereof to define a plurality of equally spaced teeth, each of said teeth including a stem portion and a head portion at a free end of said stem portion, and to form a plurality of equally spaced notches at the corresponding opposite portions on the other side thereof to said respective teeth, said slots including additional notches formed on opposite sides of the stem portion of said respective teeth to serve to minimize plastic deformation of the teeth;

helically and closely winding said steel strip with said teeth to be directed inwards; and

coining said helically and closely wound steel strip into a substantially geometrically circular form, said notches formed on the stem portion of said teeth serving to minimize plastic deformation stresses induced at the time of winding said steel strip and at the time of performing the coining treatment.

3,842,494

MULTICHANNEL MAGNETIC FERRITE HEAD AND A METHOD FOR MAKING THE SAME

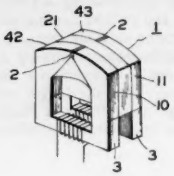
Hiroyuki Chiba, Neyagawa; Eiichi Hirota, Sakai, and Shoji Nakamura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 26, 1970, Ser. No. 14,499

Claims priority, application Japan, Mar. 11, 1969, 44-19676; Mar. 12, 1969, 44-19701; Sept. 1, 1969, 44-70422; Sept. 1, 1969, 44-70423

Int. Cl. G11b *5/26, 5/42*

U.S. Cl. 29—603 **3 Claims**



1. A method of making a multichannel magnetic head comprising forming two hollows in each of a pair of ferrite blocks, a laterally opening hollow opening out of one surface of each block and a hollow opening out of a surface of each block which is perpendicular to said one surface; polishing the pairs of surfaces on opposite sides of said laterally opening hollows in each block; bonding the pair of said hollowed and polished ferrite blocks by glass bonding the corresponding polished surfaces to each other so as to form two magnetic gaps; forming a plurality of grooves through the bonded blocks transversely to the bonded surfaces so as to form a plurality of head tips, said plurality of grooves being substantially equidistantly spaced along the blocks and each having the same size; heating the bonded blocks having said plurality of grooves formed therethrough; filling said plurality of grooves with molten glass to form a plurality of glass spacers; cutting one side of said bonded blocks in a plane parallel to the bottom face of said plurality of grooves to leave a series of head elements separated by glass spacers and each having an inner leg and an outer leg on each side of the plane of the magnetic gaps; shaping the side of the bonded blocks opposed to said one side so as to have a convex surface which acts as a tape engaging surface; dividing the shaped blocks into multichannel magnetic head elements, each of which includes a plurality of head tips; attaching to an inner leg on one side and an outer leg on the other side of each head tip a back-core having windings wound thereon; and attaching the back-cores in adjacent head tips in positions offset from each other transversely of said hollows.

3,842,495

CONTROL OF RATE OF CHANGE OF RESISTANCE AS A FUNCTION OF TEMPERATURE IN MANUFACTURE OF RESISTANCE ELEMENTS

Kenneth R. Bennett, San Diego, and Joseph W. Crownover, La Jolla, both of Calif., assignors to GTI Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1973, Ser. No. 326,430

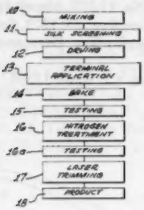
Int. Cl. H01c *7/00, 17/00*

U.S. Cl. 29—620 **12 Claims**

1. The method of improving the temperature stability of an electrical resistance element in film form and which has been fired at relatively high temperature in air, the element selected from the group consisting of noble metals and oxides thereof, that includes:

a. heating said element at relatively high temperature between about 650°C and 750°C and while the element is exposed to a gaseous environment containing nitrogen in greater percentage than found in air, and

b. continuing said heating for a time interval characterized in that the rate of change of resistance of the element as

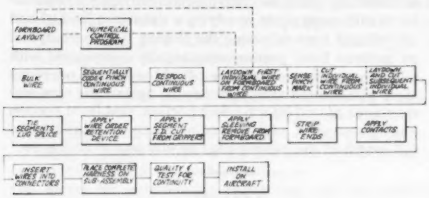


a function of temperature change is substantially reduced.

3,842,496
METHOD AND APPARATUS FOR SEMIAUTOMATICALLY MANUFACTURING ELECTRICAL WIRE HARNESS

Paul W. Mercer, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 18, 1972, Ser. No. 227,381
Int. Cl. H01b *13/00*
U.S. Cl. 29—624 **25 Claims**


FORMBOARD LAYOUT
NUMERICAL CONTROL PROGRAM
BULK WIRE
SEQUENTIALLY CUT & PUNCH CONTINUOUS WIRE
RESPOOL CONTINUOUS WIRE
LAYDOWN FIRST WIRE OR TERMINATED FROM CONTINUOUS WIRE
SENSE PUNCH WIRES
CUT INDIVIDUAL WIRE FROM CONTINUOUS WIRE
LAYDOWN AND CUT SUBSEQUENT INDIVIDUAL WIRES
TYP. SEQUENTIAL LOG ENTRIES
APPLY WIRE ORDER RETENTION DEVICE
APPLY SEGMENT T.B. CUT FROM SPOOLER
APPLY SLEEVING REMOVE FROM FORMBOARD
STRIP WIRE ENDS
APPLY CONTACTS
INSERT WIRES INTO CONNECTORS
TRACE COMPLETE HARNESS TO SUB-ASSEMBLY
QUALITY & TEST FOR CONTINUITY
INSTALL IN AIRCRAFT

1. A method for assembling electrical wire harnesses comprising:

withdrawing an elongate wire from a storage zone and laying a first portion thereof onto a formboard along a predetermined path,

severing the elongate wire at a first predetermined severing location to produce a first individual wire,

retaining the ends of the first individual wire on the formboard at predetermined locations,

laying subsequent portions of the elongate wire along individually predetermined paths and severing the elongate wire in a predetermined sequence to produce subsequent individual wires,

retaining the ends of the subsequent individual wires on the formboard at predetermined locations, the predetermined locations including at least one grouping of certain ones of the wire ends adjacently retained in an ordered array to form a harness segment end,

interconnecting the individual wires of the segment end retaining the ordered array,

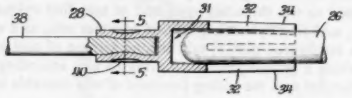
removing the segment end from the board,

sequentially selecting an individual wire from the array and mating each of the ends of the individual wires with a preselected socket in a connector.

3,842,497
ELECTRICAL CONTACT AND CONDUCTOR, AND METHOD OF MAKING

Lawrence Joseph Kehl, North Riverside; Robert Gerald Janis, Cicero, and Tedford Hollace Spaulding, Norridge, all of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 87,805, Nov. 9, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 292,044
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **6 Claims**



1. A method of making an electrically conductive component including the steps

providing a conductor wire,

providing a one-piece connector member of soft deformable material capable of being hardened by heat treating and having a crimp pocket end for receiving the conductor wire, and a socket end for receiving a mating contact,

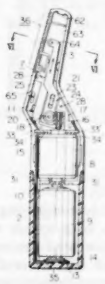
crimping the soft pocket end of the connector member on the conductor wire to deform the pocket end on the wire to form a unitary and effectively integral member, and

heat treating the connector member under conditions for hardening the material of the connector to increase the hardness of the crimped pocket end and the socket end.

3,842,498
ELECTRIC RAZOR

Shiro Mizobata; Yoshiro Kawano; Kenzo Itoh, and Takeshi Usui, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 21, 1972, Ser. No. 282,020
Claims priority, application Japan, Aug. 26, 1971, 46-65357
Int. Cl. B26b *19/06, 15/00*
U.S. Cl. 30—43.92 **4 Claims**



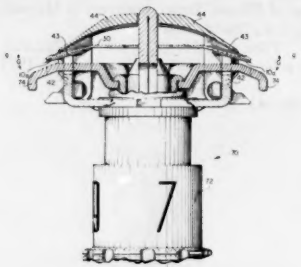
1. A battery operated electric razor comprising a pair of comb-shaped fixed and movable blades, said movable blade being reciprocally slidable in contact with said fixed blade, a frame member, driving means including a driving lever coupled at one end thereof to said movable blade for reciprocally sliding the same and fixed to one side of said frame member, a motor fixed to the other side of said frame member for operating said driving means and provided with a rotary shaft extending through said frame member, at least one dry cell battery disposed in contact at one pole thereof with an input terminal of said motor, an electrically conductive metallic member for supporting said dry cell battery secured at one

end thereof to said frame member and having the opposite end thereof in contact with the other pole of said battery, and a case enclosing said frame member and the components secured thereto which form an integral internal mechanism independent of the case, said case being constituted by a first cylindrical section closed at one end for housing said battery and threaded at the other open end thereof and a second section comprising two connected together halves divided in the axial direction of the razor, one part of said second section of said case housing said driving means and another part of said section having a cylindric configuration housing said motor and terminating in an open threaded end which is screw connected to the threaded open end of said first cylindrical section, said first cylindrical section together with said cylindrically configured part of said second section of said casing establishing a gripping portion having its axis extending in a plane parallel with the sliding direction of said movable blade.

3,842,499
RAZOR BLADE ASSEMBLY

Francis W. Dorion, Jr., Hingham; Paul W. Douglass, Winchester; Warren I. Nissen, Topsfield, and Roger L. Perry, Lynnfield Center, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Sept. 8, 1972, Ser. No. 287,515
Int. Cl. B26b *21/54, 21/22*
U.S. Cl. 30—50 **21 Claims**



1. A razor blade assembly comprising:

a. a frame in the form of a spacer member, said spacer member having an elongated central base portion and a ramp portion on each side thereof, said ramp portions having a pair of surfaces thereon and being permanently inclined at an angle of 13°–16° relative to said base portion,

b. a planar first blade disposed on one surface of each of said ramp portions and having a first cutting edge extending beyond an edge of said frame,

c. a planar second blade disposed on the other surface of each of said ramp portions and having a second cutting edge extending a second distance beyond said edge of said frame,

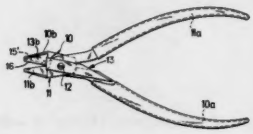
d. said surfaces having a maximum separation of 0.006–0.02 inch,

e. at least one said blades having a cutting edge such that a bisector of an angle defined by surfaces of the cutting edge is disposed at an angle to the plane of such blade.

3,842,500
WIRE-CUTTING TOOL PROVIDED WITH HOLDING MEMBER

Klaus Cassel, Solingen, Germany, assignor to Werkzeug-Union GmbH, 56 Wuppertal-Cronenberg, Germany

Continuation of Ser. No. 17,177, March 6, 1970, abandoned. This application Apr. 23, 1973, Ser. No. 353,724
Claims priority, application Germany, Mar. 11, 1969, 1912254
Int. Cl. B26b *17/04*
U.S. Cl. 30—124 **3 Claims**



1. In a wire-cutting tool including a pair of plier arms interconnected for relative rotation in a swing plane about a pivotal axle, said arms having rearwardly extending shanks and forwardly extending jaws with sloping faces which terminate in respective cutting edges meeting along a straight line in a closure position, and a holding member secured to one of said arms for joint swinging to grip a cut-off wire end between itself and the opposite jaw upon closure of said jaws, the improvement wherein said holding member is a flat integral resilient strip longitudinally subdivided into three portions, namely:

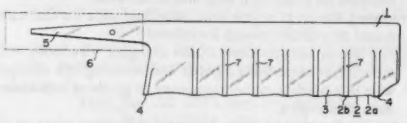
a rear portion parallel to said swing plane traversed by said pivotal axle and rigidly anchored rearwardly of said axle to the shank of said one of said arms;

a substantially triangular intermediate portion perpendicular to said swing plane overlying a transverse land of said one of said arms adjoining the sloping face thereof; and an inclined front portion substantially coextensive with said sloping face of said one of said arms and overlying same with limited relative slidability against the torsional resistance of said intermediate portion, said front portion having a straight edge extending along substantially the full length of the cutting edge of said one of said arms.

3,842,501
KNIFE

Akira Honma, 552, Oaza-Takayama, Tokamachi, Japan

Filed May 9, 1973, Ser. No. 358,811
Claims priority, application Japan, May 15, 1972, 47-056685
Int. Cl. B26b *9/02, 29/02*
U.S. Cl. 30—286 **2 Claims**



1. A knife comprising a blade with a cutting edge having a series of non-cutting portions projecting outwardly beyond said cutting edge and a series of concave portions recessed from said cutting edge, the projecting portions and the concave portions being disposed in alternate arrangement along said cutting edge, each of said recessed portions forming an individual cutting edge, a series of parallel elongated ribs formed on one side surface of said blade and extending trans-

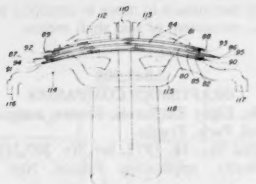
versely of said cutting edge over a substantial transverse width of said surface, each said rib having one end at the cutting edge forming a respective said projecting portion, said ribs being raised from the remainder of said one side surface of the blade and having said one ends thereof rounded to form the non-cutting portions.

3,842,502

SHAVING UNIT FOR SAFETY RAZOR

Ward S. Hagan, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 21, 1973, Ser. No. 427,180
Int. Cl. B26b *21/54, 21/22*
U.S. Cl. 30—346.58 **16 Claims**



1. A shaving unit for a safety razor, said shaving unit comprising:

a. a first member including a pair of opposite sides, each one of the first member opposite sides having a cutting edge;

b. a second member including a pair of opposite sides, each one of the second member opposite sides having a cutting edge, said second member being positioned above said first member with the cutting edges of said second member being positioned upwardly and inwardly of the cutting edges of said first member;

c. a third member including a pair of opposite sides, each one of the third member opposite sides having a cutting edge, said third member being positioned below said first member with the cutting edges of said third member being positioned downwardly and inwardly of the cutting edges of said first member; and

d. means for permanently connecting said first member, said second member and said third member together.

3,842,503

METHOD FOR ORTHODONTIC TREATMENT

Alexander J. Wildman, Eugene, Oreg., assignor to Silverado Industries Inc., Napa, Calif.

Continuation-in-part of Ser. No. 51,411, May 27, 1970, abandoned, which is a division of Ser. No. 857,351, Sept. 12, 1969, Pat. No. 3,578,744. This application Aug. 29, 1973, Ser. No. 392,483
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **4 Claims**

1. In a method of orthodontry for positioning teeth in desired tooth positions the steps comprising,

affixing, to the teeth in a patient's mouth, brackets which are to be fixed to arch wires,

making an impression of the teeth with the brackets thereon,

simulating the position of each tooth in an ideal model and the position of the brackets thereon,

forming arch wires in said ideal model so as to conform to the desired tooth positions on said model,

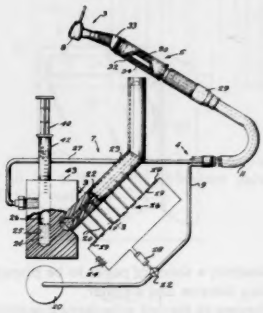
removing said arch wires from said model and attaching said wires to the brackets on the teeth in a patient's mouth.

3,842,504

HYDRAULIC CONTROL DEVICE

Melvin D. Ricks, 1017 N. Pacific Ave., Glendale, Calif. 91202

Continuation of Ser. No. 77,939, Oct. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 769,218, Oct. 21, 1968. This application Sept. 11, 1972, Ser. No. 287,820
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **17 Claims**



1. A control device for a tool comprising:

a tool workhead;

a supply line connected to said workhead;

pressure-responsive means for controlling said supply line;

handle means for manually gripping said tool during its operation;

a hand-actuated pliant chamber on said handle means; and

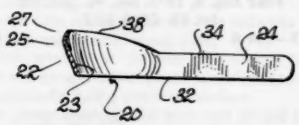
first conduit means connecting said hand-actuated chamber with said pressure-responsive means whereby manipulation of said hand-actuated chamber controls said supply line.

3,842,505

PRE-FORMED DENTAL MATRIX BAND

Wilmer B. Eames, 3898 Sable Dr., Stone Mountain, Ga. 30083

Filed Feb. 20, 1973, Ser. No. 334,004
Int. Cl. A61c *5/12*
U.S. Cl. 32—63 **5 Claims**

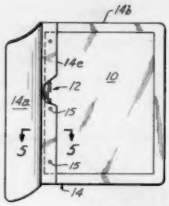


1. In a dental matrix band construction wherein the band comprises a central tooth-surrounding portion defining an inner tooth engaging surface, and arms at the opposite ends of the central portion for holding the band in position on a tooth, the improvement wherein said central portion defines a lower edge and an upper edge, said central portion being substantially straight in the lower part of the band which extends upwardly from said lower edge, and said central portion then bending inwardly in the upper part of the band whereby said tooth engaging surface is curved to define a concave configuration, said lower part extending angularly upwardly and outwardly from the lower edge of the band for about two-thirds of the height of the central portion, and said upper part bending upwardly and inwardly in the upper one-third of the central portion.

3,842,506
SPACING MEANS AND METHOD FOR TYPING PAPER

Don F. Pascua, Carson, and Harold C. Stearns, Hermosa Beach, both of Calif., assignors to Space Paper Products, Hermosa Beach, Calif.

Filed Sept. 14, 1972, Ser. No. 288,961
Int. Cl. G01b 3/10
U.S. Cl. 33—1 B 1 Claim



1. In combination, a sheet of paper to be placed in a typewriter for typing thereon and a folder;

said sheet having at the left side thereof registration holes for binding in said folder and a vertical scale of insignia arranged in two groups, the first of which is above the second, the first group being adapted to indicate lines for text, and the second group being adapted to indicate lines for footnotes, the insignia of said first group representing successive lines in numerical order in the downward direction for typing down from the uppermost line of typing on the sheet, and the insignia of the second group representing successive typing lines in numerical order in the upward direction from the lowermost line of typing on the sheet;

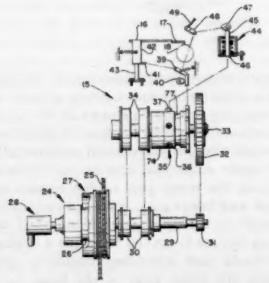
said folder containing a flap having registration holes aligned with the registration holes of the sheet; and

fastening means maintaining the registration holes of the sheet in registration with the respective registration holes of the flap so that the flap conceals the scale from view.

3,842,507
RECORDING INSTRUMENT FOR DETERMINING RATE OF PENETRATION IN A BOREHOLE

Harry Boucher, Odessa, Tex., assignor to Gardner-Denver Company, Quincy, Ill.

Filed Aug. 8, 1973, Ser. No. 386,758
Int. Cl. G01b 3/12
U.S. Cl. 33—134 R 15 Claims



1. A measuring instrument, comprising a shaft having an impulse means thereon, a cam means having a lobe thereon, said cam means being journaled to said shaft for limited movement relative thereto, said impulse means being connected to impart rapid motion into said cam means each time said shaft rotates through an angle proportional to the number of lobes on said cam means, a recording means including a scribe, and means for actuating said recorder means by said lobe;

a drive means on said shaft, said drive means including a drum, a disconnect means for selectively engaging said drum to said drive means;

said drum includes a cable means roved thereabout for rotating said drum in response to linear movement of the cable means;

said means responsive to movement of said cam means includes a cam follower;

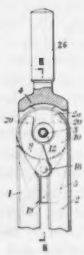
said cam follower being connected to move said scribe means in response to movement of said lobe; and,

means by which said impulse means can be de-actuated to allow said cam means to move in direction proportion to rotational movement of said shaft means.

3,842,508
DRAFTSMAN COMPASSES

Marcel Gentils, Ligny En Barois, France, assignor to Essilor International, Paris, France

Filed Nov. 16, 1972, Ser. No. 307,310
Claims priority, application France, Nov. 16, 1971, 71.40920
Int. Cl. G01b 3/16
U.S. Cl. 33—157 4 Claims



1. Draftsman compasses comprising an inverted U-shaped member provided with a gripping knob extending in a direction opposite to that of the lateral branches of said member, a pair of legs provided at one end with a circular flange somewhat thinner than the leg proper and formed with a central hole, the lateral branches of said inverted U-shape member having a width which has a value substantially equal to that of the diameter of said circular flanges, and having a length which is about twice the value of the diameter of said circular flanges, the circular flanges of both legs being disposed between the lateral branches of said inverted U-shaped member and a gap being left between each circular flange and the adjacent branch of the inverted U-shaped member, spacer means in each gap, a screw extending through registering holes formed in said branches, in said spacer means and in said circular flanges for pivotally connecting said pair of legs to said branches, and a pair of arcuate-shape flat links disposed in said gaps, respectively, and each pivoted at one end to a respective circular flange of a compass leg and at the other end to one another through a pivotal connection guided in rectilinear grooves formed in the inner faces of the lateral branches of said inverted U-shaped member, respectively, said grooves extending below said screw in a parallel direction to the longitudinal axis of the gripping knob of said inverted U-shaped member, said links being pivoted to the circular flanges of the compass legs at points thereof which, in the closed position of the compass legs, are located above the

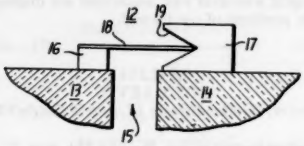
centre of said circular flanges, whereby said links remain substantially entirely concealed by the branches of said inverted U-shaped member irrespective of the angular position of the compass legs.

3,842,509

STRAIN GAUGE AMBIGUITY SENSOR FOR SEGMENTED MIRROR ACTIVE OPTICAL SYSTEM

Charles L. Wyman, Huntsville, Ala., and Thomas L. Howe, Atlanta, Ga., assignors to The United States of America as represented by the administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,792
Int. Cl. G01b *7/18, 7/31*
U.S. Cl. 35—180 R **9 Claims**



1. A system capable of measuring misalignment of the order of a few thousandths of an inch between interfacing edges of a plurality of mirror segments positioned to form a segmented mirror surface, comprising:

strain gauge means comprising a bending arm coupled across the interface of the edges of adjacent mirror segments, said bending arm having a first position corresponding to alignment of the edges of adjacent mirror segments, and being bendable from the first position in a direction and to a degree dependent upon the relative misalignment between the edges of adjacent mirror segments to correspondingly vary the resistance of the strain gauge means, said bending arm having a plurality of piezoresistive elements mounted on it,

a source of power,

an amplifier,

the strain gauge means and the amplifier being connected in circuit with the source of power to vary the output of the amplifier according to the misalignment of the edges of adjacent mirror segments,

said strain gauge means comprising a first block bonded to a first mirror segment, a second block defining a groove facing said first block bonded to an adjacent second mirror segment, a first end of said bending beam being bonded to the first block, and the second end thereof being bonded in pivotal fixed position in the groove of the second block.

3,842,510

ELECTRIC OUTLET BOX LOCATOR

Bill J. Elliott, 8297 W. Dry Creek Rd., Healdsburg, Calif. 95448

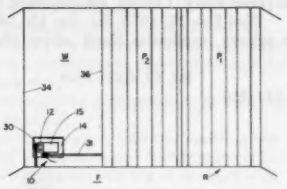
Filed June 25, 1973, Ser. No. 372,800
Int. Cl. G01b *5/14, 3/02;* **B25h** *7/00*
U.S. Cl. 33—180 R **4 Claims**

1. An electrical outlet box locator comprising:

a template member having a window opening therein presenting a pair of straight, internal perpendicular surfaces adapted to engage vertical and horizontal outer surfaces of an outlet box;

one of said perpendicular surfaces being at least as long as the width of a standard multiple outlet box;

markings along said one perpendicular surface indicating various standard widths for outlet boxes; and



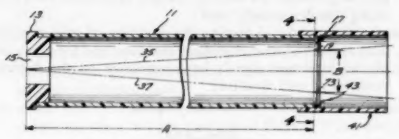
a pair of extensible members on said template member adapted to be extended in directions parallel to said perpendicular surfaces.

3,842,511

INTEGRAL HAND HELD TAILGATING DEVICE

Garth Young, Jr., 25441 Via Piedra Blanca, Laguna Niguel, Calif. 92677

Filed Aug. 7, 1972, Ser. No. 278,449
Int. Cl. G01c *3/12;* **G01b** *11/04*
U.S. Cl. 33—277 **3 Claims**



1. An integral hand held tailgating device for use by a passenger in a trailing vehicle to determine when such trailing vehicle is spaced recommended distances behind a lead vehicle of a predetermined width for respective selected speeds of travel and comprising:

an elongated tube having front and rear ends and defining an optically uncorrected visual path;

an eyepiece mounted in the rear end of said tube and formed with an aperture disposed in said path and including a rearwardly facing abutment surface;

a distance gauge overlying the front end of said tube and spaced a predetermined distance from said abutment surface, said gauge including a transparent window;

a plurality of sets of vertically extending indicator lines spaced apart respective horizontal distances corresponding with the apparent width of said lead vehicle for said recommended distances as viewed with the viewer's eye placed immediately behind said aperture;

indicia corresponding to said selected speed disposed adjacent said respective indicator lines; and

a hood removably telescoped over said front end of said tube and formed with interior retaining flange means for engaging said gauge and retaining it against said front of said tube, whereby a passenger in said trailing car may place said abutment against his face to view said lead vehicle along said optical path and through said window and can then determine when said trailing car is the recommended distance behind a lead vehicle for said selected speeds of travel.

3,842,512
DEVICES FOR SENSING DEVIATIONS FROM A HORIZONTAL PLANE

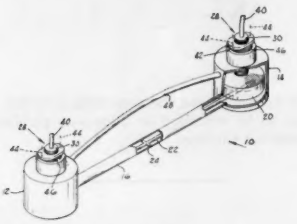
Andries Johannes Stoltz; Nicolaas Johannes Cornelius Snyders, and Elin Pickard, all of Pretoria, South Africa, assignors to Monres (Proprietary) Limited, Johannesburg, South Africa

Filed Feb. 27, 1973, Ser. No. 336,343

Claims priority, application South Africa, Mar. 13, 1972, 72/1697

Int. Cl. G01c *9/06*

U.S. Cl. 33—366 **8 Claims**



1. A device for sensing deviation from a horizontal plane which comprises

a pair of spaced chambers each partially filled with a liquid;

a tube interconnecting the lower parts of the chambers to permit flow of liquid between the chambers;

a structure comprising a first float, a second float, and a rod connecting the two floats, there being a float in each chamber and said rod passing through the tube and being pivotally connected thereto thereby to prevent both floats rising simultaneously; and

sensing means for detecting the position of said structure with respect to said chambers and tube and for producing electrical output signals in dependence on the detected position of said structure.

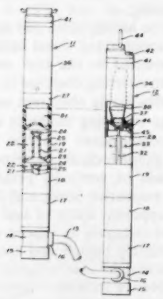
3,842,513
LEVELING INSTRUMENT

Edward S. Clark, 3210 Guido St., Oakland, Calif. 94602

Filed June 22, 1972, Ser. No. 265,153

Int. Cl. G01c *5/04, 9/22*

U.S. Cl. 33—367 **14 Claims**



1. Leveling apparatus for use in establishing the level of one location with respect to another separated therefrom, comprising: a plurality of static-pressure tube assemblies respectively provided with flow passage means therein adapted to be oriented in a generally upright position during use of said apparatus; one of said assemblies being a reference component adapted to be disposed at the one such location with respect to which the other is to be leveled, and another of said assemblies being an indicator component adapted to be disposed at the location to be leveled and including visual observation means enabling the relative levels of such locations to be visually determined; flexible tubing extending between said assemblies in communication with said flow passage means therein to flow interconnect the same; a body of liquid within said tubing and flow passage means to provide the leveling medium for said apparatus; and structure provided in each of said assemblies for inhibiting escape of liquid therefrom to the ambient environment and for normally maintaining substantially ambient pressures upon said body of liquid within said flow passage means, and air-confinement means provided in each of said assemblies for resisting, whenever said assemblies are displaced from the upright position of use thereof, ingress into said tubing of air normally acting upon said body of liquid, each of said air-confinement means comprising an air separation section disposed along the associated flow passage means and providing a collection space into which air bubbles tend to rise and collect so as to remain separated from said body of liquid whenever said assemblies are displaced from the upright positions of use thereof.

3,842,514
LIQUID LEVEL

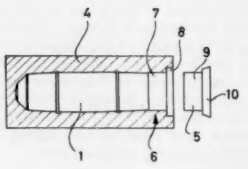
Guido Scheyer, Hanflandstrasse 15, A6840 Gotzis/Vlbg., Austria

Continuation-in-part of Ser. No. 853,254, Aug. 27, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,835

Claims priority, application Germany, Sept. 28, 1968, 1798351

Int. Cl. G01c *9/26*

U.S. Cl. 33—379 **2 Claims**



1. A method of making a level, comprising the steps of forming a passage in a body composed at least in part of a transparent plastic material, said passage having an open end and said transparent material of said body having a Mohs hardness of between 2.1 and 3, and a first elasticity in the region of said open end; partially filling said passage with a liquid; fitting a closure means into said open end while simultaneously pressuring the interior of sais passage, said closure means consisting of a plastic material other than the plastic material of said body and having a Mohs hardness of between 1 and 2, and a second elasticity of between 20,000 and 30,000 kp/cm² which is greater than said first elasticity; and ultrasonically welding said closure means to said body while said closure means is fitted into said open end of said passage in said body.

3,842,515
METHOD FOR DRYING WATER-WET MEMBRANES

William MacDonald, Sherwood Park, and Chuen-Yong Pan, Edmonton, Alberta, both of Canada, assignors to Alberta Helium Limited, Calgary, Albert, Canada

Continuation-in-part of Ser. No. 307,874, Nov. 20, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,900

Int. Cl. F26b *3/00*

U.S. Cl. 34—9 **15 Claims**

1. A method for drying a water-wet cellulose ester membrane, which comprises:

immersing the membrane in water-soluble alcohol for a sufficient period of time so as to replace substantially all the water with the alcohol;

immersing the alcohol-wet membrane in nonpolar alcohol-soluble organic liquid for a sufficient period of time so as to replace the alcohol with the organic liquid;

drying the organic liquid-wet membrane to produce a dry membrane;

the temperature of the membrane, the alcohol and the organic liquid being maintained below ambient temperature during replacement so as to stiffen the membrane pore walls during the replacement process.

3,842,516
SHAFT COOLER CONSTRUCTION

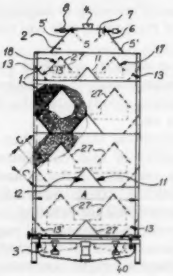
Werner Speissegger, Hauptwil, and Hans Baumeler, Uzwil, both of Switzerland, assignors to Gebruder Buehler AG, St. Gallen, Switzerland

Filed Aug. 8, 1973, Ser. No. 386,542

Claims priority, application Switzerland, Aug. 24, 1972, 12577/72

Int. Cl. F26b *17/12*

U.S. Cl. 34—170 **18 Claims**



1. A cooling tower for feed cubes comprising a plurality of vertically stacked tubular shaft elements each having a plurality of transversely parallel air delivery roofs at a first upper level and a plurality of transversely spaced air feed roofs at a second lower level, said air feed roofs being air permeable and open at the bottom side thereof, said air delivery roofs and said air feed roofs all comprising roof-like structures with downwardly diverging top roof walls, an exhaust conduit arranged alongside said shaft cooler and connected laterally to said air delivery roofs, and a transition piece forming a separator in the connection between said exhaust conduit and said air delivery roofs.

3,842,517
ELECTRONIC TRAINING & DIAGNOSING APPARATUS

Gerard B. La Chance, 35 McClure Pl., Fall River, Mass. 02720

Filed Jan. 29, 1973, Ser. No. 327,740

Int. Cl. G09b *23/18*

U.S. Cl. 35—19 A **1 Claim**

1. A training apparatus for use by a student to familiarize the student with certain predetermined faults that may typically occur in a conventional electric or electronic circuit, said apparatus comprising;

a box-shaped enclosure having top and bottom walls, side walls, a facewall and a back wall defining an opening for providing access to the inside of the enclosure,

a plurality of components including resistors, capacitors and transistors interconnected by conductor means to form the circuit and being disposed within the enclosure,

said circuit being schematically formed on the facewall,

a plurality of test receptacles disposed at different points in the circuit and accessible from the facewall to measure parameters of the circuit,

means for receiving power to operate the circuit,

a switch coupled to said receiving means for selectively applying power to the circuit,

means for receiving a meter to measure the power drawn by the circuit when operating,

a switch array including a plurality of switches,

means for holding the switches in an array within the enclosure and in a position to be operated through the opening in the back wall,

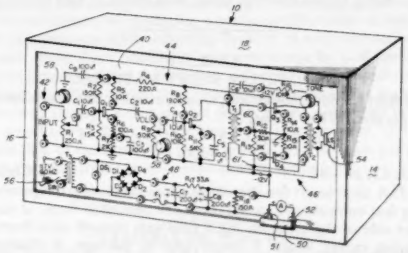
means interconnecting each switch to at least one component of the circuit,

each said switch having at least two positions one of which introduces a predetermined fault into the circuit,

a door for covering the opening in the back wall,

means for hingedly supporting the door,

and a lock for the door for securing the door in its closed position wherein the student cannot ascertain the positions of the switches,



one of said switches comprising a two position switch having a short circuit position and an open circuit position and for connecting to the collector of a transistor to simulate an open collector fault,

another one of said switches comprising a two position switch having a resistor associated therewith for selective connection in parallel with either another resistor or capacitor of the circuit to simulate leakage through the resistor or capacitor,

another one of said switches comprising a two position switch having a resistor associated therewith for selective connection across the collector and emitter of a transistor of the circuit to simulate leakage of the transistor,

another one of said switches comprising a two position switch having a short circuit position and an open circuit position and for connection across the base to emitter of a transistor to simulate a short circuit fault condition.

3,842,518
CROSS-COUNTRY SKI BOOT

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,188

Int. Cl. A43b *00/00*

U.S. Cl. 36—2.5 AL **6 Claims**

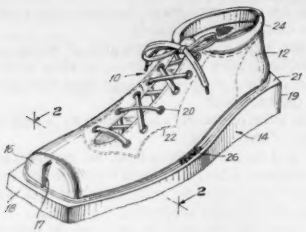
1. In combination a cross-country ski boot having a soft, flexible, low slung upper and a substantially inflexible sole joined by stitching; which comprises

a. said sole being a solid wedge-shaped laminate with a squared-off heel and toe comprised of a crepe wear sole adhered to a hard rubber internal layer;

b. a top layer of reconstituted leather adhered to said hard rubber layer on the side opposite said crepe wear sole;

c. said upper being a laminate with the outer layer thereof having an outwardly extending flange forming an interface with said top layer of said sole around the entire

peripheral extent of said ski boot, said flange being joined to said sole by said stitching;



d. an insole disposed adjacent said interface; and

e. the entire periphery of at least one lamina of said upper being folded inwardly under said insole at said interface.

3,842,519

DEODORIZER SHEET MATERIAL

Herbert Lapidus, Ridgefield, Conn., assignor to Combe Incorporated, White Plains, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,757
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **6 Claims**

1. A shoe insert for absorbing odors resulting from perspiring feet comprising a cured sheet of opencelled foam, at least one side of the sheet having a relatively smooth skin formed during curing which is impervious to passage of charcoal particles, said foam containing homogeneously distributed through the solid part thereof finely divided activated charcoal particles in an amount effective to absorb odors when said sheet is subjected to contact with foot perspiration and to passage of odor-filled air through interstitial spaces within said foam, said charcoal particles having been incorporated prior to frothing and curing of said foam.

3,842,520

PROTECTOR CLEAT FOR HEELS AND TOES OF SOLES OF BOOTS, SHOES AND THE LIKE

Paul M. Heptig, 2707 Kansas Ave., McKeesport, Pa. 15132

Filed Dec. 3, 1973, Ser. No. 420,939
Int. Cl. A43b *13/22*
U.S. Cl. 36—74 **3 Claims**

1. A protective type cleat intended for use with shoes, boots and the like and adapted to be driven into the wear surface of the heels and soles of such boots and shoes, the cleat comprising:

a head portion have a flat bottom surface adapted to be mounted flush with the wear surface of the heel or sole; an exterior top wear surface on said head portion;

an outer peripheral edge extending completely about the peripheral edge of the head portion flat bottom surface and projecting slightly outwardly from the plane thereof to define a shoulder like annular rim or penetrating into the wear surface of the heel or sole when the head portion bottom surface is disposed flush thereto;

a plurality of angularly spaced apart outwardly projecting pointed flange members mounted on the head portion bottom surface and projecting outwardly therefrom in a direction normal thereto for engaging in a penetrating manner the heel or sole wear surface upon the head portion bottom surface being disposed flush thereto, there being a total of four flange members each spaced ninety degrees apart from each other, each of the flange members being spaced radially inwardly from the peripheral edge of the head portion bottom surface to define a circle concentric with said peripheral edge, each of said flange members being of a flat general configuration disposed along a radial axis of the circular head portion; an aligning and driving slot extending diametrically through the exterior top wear surface of the head portion adapted for use in assisting in aligning the cleat with the wear surface of the heel or sole and then driving the cleat thereinto;

a cylindrical base member disposed concentric with said head portion bottom surface and formed integrally therewith and projecting axially outwardly therefrom terminating in an outer end;

an elongated cylindrical shaft member of a diameter less than the diameter of said base member being formed integrally with said base member and concentric therewith and extending axially outwardly from said base member outer end and terminating in an outer end;

a conically shaped pointed terminal member formed integrally with said outer end of said shaft member and having the base thereof formed concentric with the projecting outer end of said shaft member and having its apex defining a pointed terminal end, the diameter of the base of the conical member being substantially equal to the diameter of said conical base member; and

a series of longitudinally spaced apart radially extending disc members formed integrally with said shaft member and concentric therewith and extending radially outwardly therefrom, the diameter of each disc member being substantially equal to the diameter of said cylindrical base member, said disc members being disposed completely along said shaft member intermediate said outer end of said cylindrical base member and said base of said terminal conical member with the disc members engaging the interior of the wear surface of the heel or sole when the cleat is driven thereinto so as to resist any withdrawal or movement tendencies of the cleat relative to the heel or sole wear surface.

3,842,521

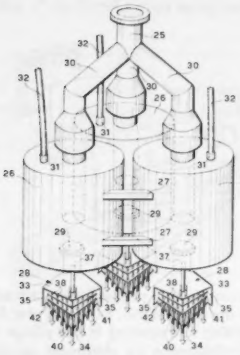
SUBMERSIBLE DREDGING PUMP AND SHOVEL ARRANGEMENT WITH SUSPENSION AND TOWING MEANS THEREFOR

Giovanni Faldi, Via Forese Donati 27, Firenze, Italy

Filed Mar. 7, 1973, Ser. No. 338,976
Int. Cl. E02f *3/92, 3/94*
U.S. Cl. 37—57 **4 Claims**

1. A dredging plant of the type comprising a submerged pump disintegrating and conveying shovel assembly, and a rig arranged to support said submerged assembly at an adjustable depth and to move it along a dredging trajectory, in which said submerged pump comprises three cylinders arranged for filling with the dredged material and to pump the dredged material which periodically fills them in sequence by means of

compressed air supplied to the cylinders from a compressor by way of a distributor, wherein each of said cylinders is connected to a corresponding dredging shovel having a front cutting edge and formed from two plates which are slightly inclined to a horizontal plane and diverge forwardly from each



other and are connected by lateral plates so as to define a cavity for collecting the dredged material, the lower of the two plates being provided with cutting means which are inclined downwards and have a tendency to sink into the bed which is dredged.

3,842,522

METHOD FOR HYDRAULICALLY RAISING ORE AND OTHER MATERIALS

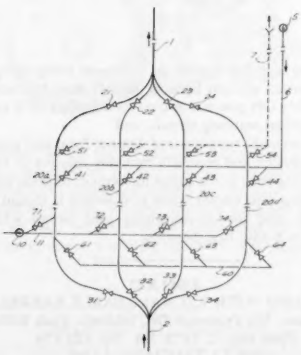
Kurt Holzenberger, Frankenthal/Pfalz, and Otto Schiele, Neudtadt/Weinstrasse, both of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Pfalz, Germany

Division of Ser. No. 195,920, Nov. 5, 1971, Pat. No. 3,753,303. This application Dec. 4, 1972, Ser. No. 312,119

Claims priority, application Germany, Nov. 10, 1970, 2055132

Int. Cl. E02f *3/88*

U.S. Cl. 37—195 **3 Claims**



1. A method of hydraulically raising material, such as ore, from the bottom of the sea through a riser conduit having upper and lower conduit portions, comprising the steps of providing a distributing station between said lower and upper riser conduit portions including a plurality of vertical conduit-shaped containers; providing a main pump means and a flushing pump means, providing connecting conduit means including a plurality of lower connecting conduits connecting the upper ends of said lower riser conduit portions with the lower ends of said conduit-shaped containers; providing connecting means between the inlet of said main pump means and said conduit-shaped containers; providing connecting means between the outlet of said flushing pump means and said conduit-shaped containers; providing valves in each of said connecting means; reducing the pressure in at least one of said containers via said main pump means while venting said container to the atmosphere for producing a pressure differential between said one container and the respective lower conduit portion of said riser conduit; opening the valve provided in the connecting means between the respective upper end of said riser conduit portion and the lower end of said one container while closing the valve in the connecting means between said main pump means and said one container so that a mixture of said material and water rises into said container through the respective lower conduit portion of said riser conduit without entering said main pump; controlling communication between said containers by producing a pressure differential in one of said containers while effecting flushing of said mixture with clear water from another of said containers by said flushing pump means so that said mixture is flushed through said upper conduit portion of said riser conduit to the sea surface without flowing through either of said pump means, said steps being carried out cyclically with the respective containers, so that the flow of the flushed material in said upper conduit portion to the sea surface level is substantially continuous.

3,842,523

VARIABLE PICTURE DEVICE

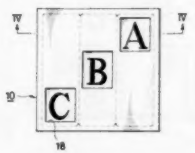
Hirokazu Yumoto, No. 1-11, 2-chome, Sumida, Sumida-ku, Tokyo, Japan

Continuation of Ser. No. 176,481, Aug. 31, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 399,318

Claims priority, application Japan, Dec. 11, 1970, 45-123670

Int. Cl. G09f *11/30*

U.S. Cl. 40—65 **4 Claims**



1. A portable variable display device comprising a casing constituted of first and second rectangular receptacles, each being open ended and each having a planar base of substantially equal length and width and upstanding walls of a height substantially smaller than the length of said base, one of said receptacles being assembled in nested and in inverted relation to the other so that the base of said one of said receptacles is spaced from the base of the other receptacle to define a single uninterrupted chamber, display windows formed in the base of each receptacle at predetermined regions thereof to permit viewing of indicia, first means lying in a first plane and movable within said chamber and comprising a first plurality of a predetermined number, greater than two, of movable elongate rectangular planar members bearing indicia for displaying said indicia through said display windows as said members are moved in said first plane within said chambers, each member having a length substantially greater than its width, said first plurality of members being disposed in side-by-side engaging relation in said chamber and occupying in said side-by-side relation substantially the full width of said uninterrupted

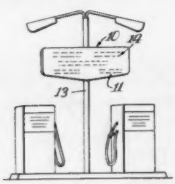
chamber, each of said members having a length extending substantially the full length of said uninterrupted chamber, second means lying and movable in a second plane parallel to the first within said chamber and comprising a second plurality of movable elongate rectangular planar members bearing indicia for displaying said indicia through said display windows as said second plurality of members are moved in said second plane within said chamber, said second plurality of members being one less in number than said predetermined number, and being of like shape as said first plurality of members, said second plurality of members being disposed in side-by-side relation in said chamber in the same orientation as said first plurality of members and in superposed and sliding engagement therewith, said first and second plurality of members having opposite sides, each bearing indicia in regions corresponding to the locations of said display windows in the bases of each receptacle, said display windows being oriented along a diagonal of each base, said first and second plurality of members being laterally incrementally displaceable in said chamber within their respective planes in a predetermined number of steps, greater than two, by supporting said casing with the bases horizontally disposed and by manually rotating said casing thus disposed 180° about an axis extending parallel to the length of said bases, said casing prior and subsequent to said rotation thereof being supported on a planar horizontal supporting surface with one of its bases in engagement therewith and with the other base subject to view by a user of the display device.

3,842,524

DISPLAY DEVICE

Fred Drueck, Jr., Chicago, Ill., assignor to National Creative Merchandising Corp., Mount Prospect, Ill.

Filed July 8, 1971, Ser. No. 160,678
Int. Cl. G09f 7/18
U.S. Cl. 40—145 **14 Claims**



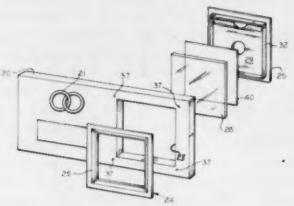
1. A display device adapted for elevated mounting on an upright pole, comprising: a pair of arms each having an inner end and an outer end; a mounting member; means pivotally mounting at least one of said inner arm ends to said mounting member adjacent each other to swing from a juxtaposed position to a spread apart position while maintaining the configuration of the individual arms; a flexible display element having a first end retained by said outer end of one arm and a second end retained by the outer end of said second arm and having a length between said first and second ends substantially equal to the spacing between said arm outer ends when said arms are swung to the spread apart position; means for releasably holding said arms in said spread apart position; and securing means adapted to secure said device to an upright pole with said display element spread between said arm ends in said spread apart position thereof, said arms having a substantially horizontal top edge and an upwardly, outwardly inclined lower edge and said display element portions defining correspondingly tapered means slidable onto the tapered arms.

3,842,525

PICTURE FRAME AND PLAQUE

William J. Deau, Manitowoc, Wis., assignor to Contemporary, Inc., Manitowoc, Wis.

Filed July 20, 1973, Ser. No. 381,012
Int. Cl. G09f 1/10
U.S. Cl. 40—159 **11 Claims**



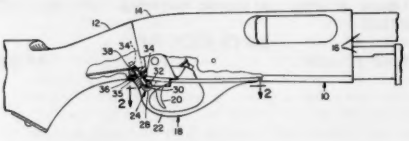
1. An article comprising a plaque having a predetermined thickness and an opening therein, front and rear frame members positioned within said opening in said plaque and held in a space parallel relationship by abuttment against opposite sides of said plaque, the front member having an opening for exposing to view a graphical display, the rear member having a panel with a guide slot formed therein, said guide slot being positioned to enable the insertion and removal of a graphic display into the frame and in the space between the front and back panels.

3,842,526

SAFETY WARNING SYSTEM FOR FIREARMS

William G. Dixon, 409 Atkinson St., Henderson, Ky. 42420

Continuation-in-part of Ser. No. 273,850, July 21, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,416
Int. Cl. F41c 27/00
U.S. Cl. 42—1 A **8 Claims**



1. A safety warning system for a firearm comprising
a safety switch on said firearm linearly movable between a first safety ON position and a second safety OFF position, an electrical warning circuit, and
a control element separate and distinct from and connected to said switch and pivotally movable relative to said firearm in response to the linear movement of said switch, for energizing said circuit when said switch is in said second position, and for de-energizing said circuit when said switch is in said first position.

3,842,527

FIREARM WITH EXCHANGEABLE BARRELS

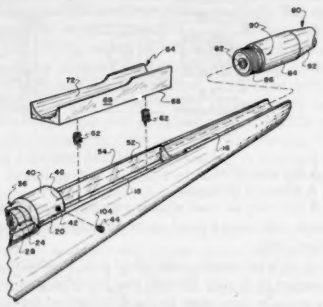
Garth R. Low, 766 Princeton Dr., Midvale, Utah 84047

Filed Dec. 3, 1973, Ser. No. 421,194
Int. Cl. F41c 21/00, 23/00
U.S. Cl. 42—75 B **7 Claims**

1. A firearm comprising:
stock means;
means mounted to the stock means for receiving and firing a cartridge, including trigger means, said mounted means

comprising an axial threaded bore at the distal end thereof;

removable and exchangeable barrel means having an axial reduced diameter threaded proximal end, sized and shaped to be matingly connected to the mounting means by the threads of the bore at the distal end thereof, the stock means comprising recess means supporting the barrel means adjacent said threaded connection, at least a portion of the barrel means being exteriorly forwardly



convergently tapered and supported by the recess means of the stock means;

said stock means further comprising a biased depressible section defining at least part of the recess means and depressible respecting the remainder of the stock means to permit axial movement of the barrel means to accommodate said tapered exterior barrel means surface during removal and connection of the barrel means to the mounted means.

3,842,528

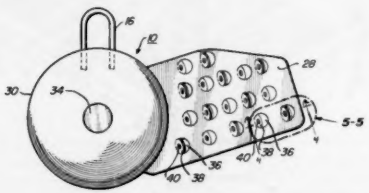
FISHING LINE WEIGHTS

Ralph Riley Hish, 129 Spruce St., Wood Dale, Ill. 60191

Filed Apr. 30, 1973, Ser. No. 355,711

Int. Cl. A01k *95/00*

U.S. Cl. 43—43.13 **11 Claims**



1. A sinker weight for fishing lines comprising a body member with a tail member affixed thereto, said tail member having a plurality of apertures aligned in a plurality of longitudinally extending rows formed therein whereby pivoting or rotation of said weight during movement of said weight through water during a trolling operation is substantially eliminated.

3,842,529

DELAYED BAIT DISPENSER

Joseph D. Richard, 3613 Loquat Ave., Miami, Fla. 33133

Filed Aug. 20, 1973, Ser. No. 389,707

Int. Cl. A01k *97/02*

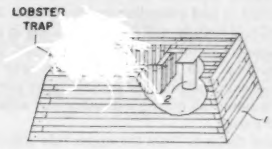
U.S. Cl. 43—44.99 **8 Claims**

1. A dispenser for releasing bait in a submerged trap after a predetermined time interval comprising:

a container for enclosing a bait substance;

a metallic anode member comprising at least a portion of the said container, said anode member having at least a partially exposed surface and a substantially high galvanic activity when immersed in seawater;

a metallic cathode member attached to the said container and electrically coupled to the said anode member, said



cathode member having at least a partially exposed surface which is relatively noble galvanically when immersed in seawater, said anode and cathode members thus comprising a galvanic couple characterized by the relatively rapid disintegration of the said anode member so that the said container becomes open after a predetermined period of immersion in seawater.

3,842,530

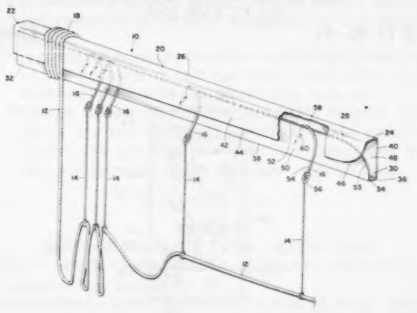
FISHHOOK AND TROTLINE HOLDER AND DISPENSER

Charles T. Jackson, Rt. 1, Box 354, Wagoner, Okla. 74467, and Roy O. Vaughn, Rt. 5, Box 640, Benton, Ark. 72015

Filed June 18, 1973, Ser. No. 371,130

Int. Cl. A01k *97/06*

U.S. Cl. 43—54.5 A **4 Claims**



1. A fishhook and trotline holder and dispenser for a trotline having a plurality of spaced leaders attached thereto, each leader having a fishhook attached to the free end thereof, and each fishhook being of substantially the same size and shape and being composed of a shank portion, an eye at one end of the shank portion for attachment to the leader, a curved portion attached at one end to the other end of said shank portion and a barb on the other end of said curved portion comprising:

an elongated casing formed by

a narrow elongated and horizontal top wall having a pair of opposite and narrow end edges and a pair of opposite and elongated side edges,

a narrow elongated bottom wall disposed below and parallel with said top wall and having a pair of opposite and narrow end edges and a pair of opposite and elongated side edges,

the side edges of said top wall being of substantially the same length as the side edges of said bottom wall, the end

edges of said top wall being wider than the end edges of said bottom wall,

an elongated and vertical side wall connected from one side edge of said top wall to one side edge of said bottom wall, an elongated and vertical lip connected to and extending downwardly from the other side edge of said top wall substantially parallel to and substantially coextensive with said side wall,

an elongated and vertical intermediate wall having a length substantially equal to that of said vertical side wall and connected to and extending upwardly from the other side edge of said bottom wall and terminating in an upper side edge spaced below and parallel with said top wall, said intermediate wall being disposed between and parallel with said side wall and said lip, the upper side edge of said intermediate wall having a rounded end adjacent one end of said casing,

the vertical distance from the upper side edge of said intermediate wall to said other side edge of said bottom wall being no greater than the distance from the center of the curved portion of the fish hook to the eye portion thereof, whereby said eye portion will be disposed below said other edge of said bottom wall when said curved portion is received on said upper side edge of said intermediate wall, and

the horizontal distance between said lip and said intermediate side wall being less than the distance from the center of the curved portion of the fishhook to the shank portion thereof, whereby the fishhook must be inserted and retained in said casing in such manner that the plane of the curved portion is at an acute angle with respect to the plane of said intermediate side wall.

3,842,531

AMUSEMENT DEVICE

Carroll D. Sloan, 310 Waldheim Dr., Ambler, Pa. 19002

Filed July 26, 1973, Ser. No. 382,893

Int. Cl. A63h *29/10*

U.S. Cl. 46—41 **15 Claims**

1. An amusement device comprising;

a. a housing forming an enclosed chamber having at least an upper zone and a lower zone, said lower zone including a first lower zone and a second lower zone;

b. a figure mounted to a platform dividing said first lower zone from said second lower zone within said chamber in said lower zone of said housing, said platform having at least one opening to permit passage of liquid from said second lower zone to said first lower zone; and,

c. liquid flow means within said upper zone of said housing for directing said liquid being maintained within said liquid flow means to said figure and to said first lower zone through said platform, said flow means being vertically displaced from and positioned above said figure, said first lower zone being of sufficient volume size to substantially accomodate all of said liquid being directed to said figure.

3,842,532

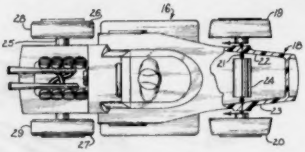
TOY VEHICLE WITH TRANSVERSE ENERGY DISTRIBUTION MEANS

Edwin Nielsen, Oceanside, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,851

Int. Cl. A63h *17/00*

U.S. Cl. 46—202 **12 Claims**



1. A toy comprising:

A. A support structure;

B. A plurality of road wheels attached to said support structure and having fixed, substantially parallel axes of rotation; and

C. A weight loosely coupled to said structure ahead of the center of gravity thereof and movable in a direction substantially transverse to the direction of movement of said toy in response to sudden acceleration of said toy in a direction having a substantially opposite transverse component to impact said structure and transfer energy from said weight to said support structure.

3,842,533

POTTING AND REPOTTING MACHINE

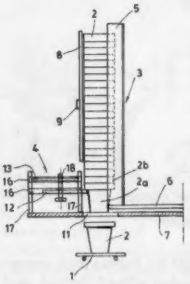
Georg Mayer, Bahnhofstrasse 60, Heidenheim-Mergelstetten, Germany

Continuation of Ser. No. 371,656, June 19, 1973, abandoned. This application Jan. 10, 1974, Ser. No. 432,164

Claims priority, application Germany, July 28, 1970, 203,7408

Int. Cl. A01g *1/04*

U.S. Cl. 47—1 **20 Claims**



1. In a potting and repotting machine having a conveying mechanism for flowerpots, said flowerpots having a rim structure adjacent the top projecting radially outwardly therefrom and a sidewardly facing surface thereon, said sidewardly facing surfaces on each of said pots in said stack defining a continuous surface with practically no discernable dividing space between said pots and support means for supporting a vertical stack of said flowerpots, the improvement comprising:

dispensing means secured to said support means adjacent the bottom of said vertical stack and above said pot conveying mechanism and adapted to dispense said flowerpots one at a time onto said pot conveying mechanism, said dispensing means comprising vertically spaced first

and second holders and guide means for supporting said first and second holders for reciprocatory movement between positions engaging and spaced from said vertical stack, said first holder consisting of a generally flat, horizontally arranged first plate, one edge of which being adapted to engage, when said first plate is in said engaging position, the bottom-most pot beneath the rim structure thereof to support the weight of said vertical stack and having means defining a first slot therein extending at a first angle to the direction of movement of said first plate, said second holder consisting of a generally flat second plate parallel to said first plate and having engaging means thereon for engaging, when said second plate is in said engaging position, said sidewardly facing surface of said rim structure of the next pot positioned vertically above said bottommost pot in said vertical stack to frictionally engage said next pot positioned vertically above said bottommost pot, said second plate having means defining a second slot therein extending at a second angle to the direction of movement of said second plate, said first slot and said second slot extending at a third angle with respect to each other; and

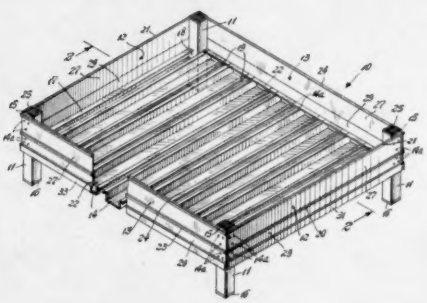
plate actuating means for effecting said reciprocatory movement of said first and second plates, said plate actuating means consisting of pin means received in said first and second slots and supported for reciprocal movement in a first direction transverse to the direction of movement of said first and second plates and transversely to each of said first and second slots and drive means for moving said pin means.

3,842,534

MUSHROOM TRAY

Armon J. Walters, 39 Haverhill Rd., and Peter A. Banis, 27 Preston Rd., both of Trumbull, Conn. 06611

Filed June 8, 1973, Ser. No. 368,354
Int. Cl. A01g *1/04*
U.S. Cl. 47—1.1 **5 Claims**



1. A tray for use in stacked relationship and adapted for the growth of mushrooms comprising:

four upright tubular aluminum legs defining the corners of a rectangle,

two opposed aluminum side panels and two opposed aluminum end panels connected to corresponding areas of said legs to define a rectangular enclosure having the legs extending beyond said panels, each of said end panels having a bottom flange which extends inwardly of said container at a right angle to said panel a sufficient distance to provide connection means for bottom members adjacent the ends of said bottom members,

a plurality of spaced angular aluminum bottom members, each of which is connected adjacent each end thereof to the bottom flange of said opposed end panels, to provide a rigid discontinuous support for the contents of said tray, the spacing between said angular bottom members providing a multiplicity of slots adapted to expose the base of the contents of the tray to ambient conditions, and

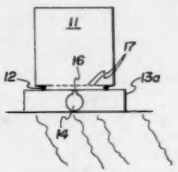
nesting means seated in the top and bottom openings of said tubular legs and adapted to nest in slip-resistant relation with corresponding nesting means on the legs of other corresponding trays when said trays are used in stacked relationship.

3,842,535

METHOD OF GROWING PLANTS HYDROPONICALLY

Gerald J. Lahr, 2664 55th, San Diego, Calif. 92105

Continuation of Ser. No. 271,140, July 12, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,329
Int. Cl. A01q *31/02*
U.S. Cl. 47—1.2 **5 Claims**



1. A hydroponic growing system comprising:

a main pipe line;

a plurality of branch pipe lines connected to said main pipe line, said branch pipe lines having a plurality of spaced apart apertures on the top surfaces thereof and container support means extending peripherally therefrom;

a plurality of containers having a bottom surface, each of said containers having at least one aperture in its bottom surface;

said containers being positioned over said branch pipes lines so that apertures in said containers match with corresponding apertures in said branch pipe lines; and

fluid-tight sealing means of compressible material positioned between the bottom surface of each of said containers and said support means, and surrounding the matched apertures of said containers and pipe lines.

3,842,536

METHOD OF PROTECTING VEGETATION

John W. Schick, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 11,315, Feb. 13, 1970, which is a continuation-in-part of Ser. Nos. 762,156, Sept. 24, 1968, abandoned, and Ser. No. 607,907, Jan. 9, 1967, which is a continuation-in-part of Ser. No. 471,720, July 13, 1965, abandoned, which is a continuation-in-part of Ser. No. 401,665, Oct. 5, 1964, abandoned. This application Oct. 30, 1970, Ser. No. 85,527. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.
Int. Cl. A01g *13/00, 13/06;* **C10l** *5/02*
U.S. Cl. 47—2 **25 Claims**

1. A method of protecting trees in orchards and other vegetation including blossoms, fruits, limbs and stems thereof from cold and frost for relatively short critical periods of time usually extending from about three to about five hours between about midnight and dawn, which comprises positioning a series of relatively small closely spaced high intensity radiation combustible units immediately adjacent to said trees and vegetation to be protected from cold and frost, initiating a heating step by igniting an easily ignitable fibrous cap section formed as a part of each unit to thereby produce a rapidly, substantially immediate, emission of radiant heat with an elevation of the temperature in the trees and vegetation, con-

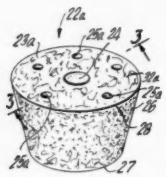
tinuing to effect said heating substantially solely thereby for a substantial portion of the said critical period without destructive overheating of the trees and vegetation and affecting ignition of a second combustible section of each of said units by continued burning of the cap section with said second section to produce the combined emission of radiant heat b6 the units and the heating of the trees and vegetation for another portion of the critical period, and thereafter continuing to effect said heating for the major portion of the critical period substantially solely by the burning of the said sections of the units which sections are comprised of two separate bodies formed principally of petroleum coke having an ignition temperature above about 2000°F. with the separate bodies having a vertically arranged burning interface therebetween which produces in the units a substantially flameless glow and emits radiant heat such as to continue the heating of the trees and vegetation at the desired level during said second sections sole heating portion of the said critical period.

3,842,537

PLANT GROWTH COMPOSITION AND STRUCTURE

Virgil M. Bishop, c/o Bishop Floral Co. P.O. Box 728, Alexander City, Ala. 35010

Filed Oct. 19, 1973, Ser. No. 407,788
Int. Cl. A01g *9/02*
U.S. Cl. 47—37 **10 Claims**



1. A growth composition comprising in combination: coconut-husk pulp in particulate form, and severed coconut-husk fibers, the pulp being of two predetermined particle size ranges and the fibers being severed and of predetermined fiber length, and the pulp and fibers being admixed with one another.

3,842,538

METHOD OF PRODUCTION OF HYBRID SEED-GRAIN

Zoltan Barabas, Szeged, Hungary, assignor to Gabonatermesztesi Kutato Intezet, Szeged, Hungary

Filed Mar. 9, 1973, Ser. No. 339,654
Claims priority, application Hungary, Mar. 13, 1972, GA 1082
Int. Cl. A01h *1/02*
U.S. Cl. 47—58 **6 Claims**

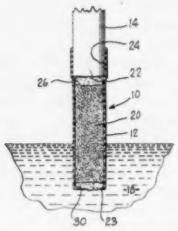
1. A method of producing hybrid seed-grain by cytoplasmic male sterility, comprising introducing into one of the parents of the hybrid to be produced a color gene, comingling the parent seeds one of which contain said color gene, sowing the comingled seeds and growing plants therefrom, harvesting and threshing the grains from said plants thereby to produce comingled hybrid grains and pure grains, and thereafter separating the hybrid grains from the pure grains according to color.

3,842,539

METHOD AND DEVICE FOR INCREASING THE LIFE OF CUT FLOWERS

John Nicholes Sacalis, P.O. Box 231 College of Agriculture & Environmental Science Dept. of Horticulture & Forestry Rutgers University, East Brunswick, N.J. 08903

Filed Nov. 12, 1973, Ser. No. 414,729
Int. Cl. A01g *5/06*; A01n *3/02*
U.S. Cl. 47—58 **5 Claims**



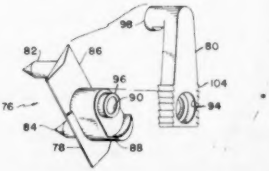
1. In the method wherein the stem of a cut flower is immersed in water to preserve and/or increase the life of the cut flower, the improvement which comprises introducing the cut end of the flower stem into contact with water under conditions such that substantially all of the water enters the cut end only after passage through a mass of anion exchange resin or a mixed bed of anion exchange resin and cation exchange resin.

3,842,540

WINDOW STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg., Co., Owensboro, Ky.

Division of Ser. No. 718,052, April 2, 1968, Pat. No. 3,643,377. This application Feb. 22, 1972, Ser. No. 227,898
Int. Cl. E05d *15/22*
U.S. Cl. 49—181 **6 Claims**

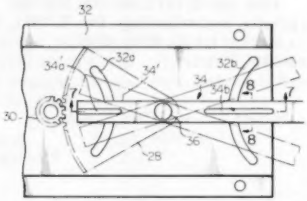


1. Pivot structure including a cam member and a lock member pivotally mounted on said cam member, said cam member including means for securing the cam member to a window sash or the like extending from one side thereof and a cylindrical camming portion extending from the other saide thereof having pivot means thereon, and the lock member including means for mounting the lock member on the pivot means and means for securing the lock member to a counterbalance or the like.

3,842,541
WINDOW REGULATOR MECHANISM FOR A VEHICLE

Shoichi Koike, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed July 5, 1973, Ser. No. 376,388
Claims priority, application Japan, July 6, 1972, 47-79198; July 6, 1972, 47-49199
Int. Cl. E05f *11/52*
U.S. Cl. 49—227 **8 Claims**



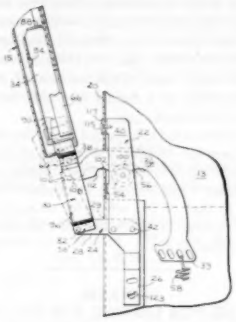
1. A window regulator mechanism for raising and lowering a curved window pane of a motor vehicle having a door inner panel, comprising a horizontally extending guide rail attached to said window pane, a horizontally extending auxiliary guide rail attached to said door inner panel, a base plate attached to said door inner panel, a regulator arm pivotally connected at its one end to said base plate through a pivot shaft mounted on said base plate and carrying at its other end guide roller rollably received in said guide rail, said regulator arm including an extension having a sliding surface, an auxiliary regulator arm pivotally connected to said regulator arm and carrying at its both ends guide rollers rollably received in said guide rail and said auxiliary guide rail respectively, driving means mounted on said base plate and operatively connected to the one end of said regulator arm for actuating the same to raise and lower said window pane, and a guide ridge provided on said base plate between said pivot shaft and said driving means and having the general shape of an annular segment, a spring washer disposed between said regulator arm and said base plate about said pivot shaft, said spring washer holding said regulator arm at a height from said base plate, at the pivot connection thereto, which is different from the height of said guide ridge, the sliding surface of said extension of said regulator arm being held by said spring washer in sliding contact with said guide ridge, whereby the distance between the center of said pivot shaft and a point of sliding contact between said sliding surface of said extension and said guide ridge varies in dependence on the angular position of said regulator arm, and the other end of said regulator arm moves in a path substantially parallel to the curvature of said window pane.

3,842,542
REMOVABLE OVEN DOOR HINGE SYSTEM

James A. White, Louisville, and Peter Nowosielski, Middletown, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed June 1, 1973, Ser. No. 366,005
Int. Cl. E05f *1/10*
U.S. Cl. 49—386 **2 Claims**

1. A vertical door frame forming a door opening, a door adapted to be hinged to the door frame and movable between a horizontal open position and a vertical closed position, a pair of hinge mechanisms mounted on the door frame, the said door being removably mounted upon the hinge mechanisms, each hinge mechanism comprising a support bracket, a door guide pivotally supported from the support bracket, a hinge lever pivotally connected to the door guide, and slot means in the door frame through which the support bracket and hinge lever extend, a door guide sleeve mounted in the door for receiving the said door guide, and slot means in the door for reception of the door guide and hinge lever, the said support bracket including a roller assembly above the bracket for cooperating with the said hinge lever, and counterbalance spring means fixed at one end and connected at the other end to the hinge lever; the invention comprising anti-wobble resilient means between the door guide and door guide sleeve at both the top and bottom thereof to cause a tight fit between

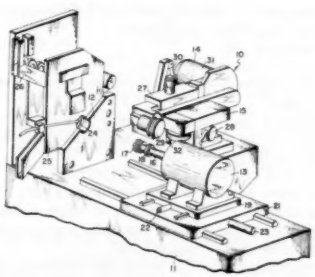


these two members and retard wobble action of the door on the hinge mechanisms in the front to back direction of pivotal movement of the door the said anti-wobble resilient means comprises an inwardly directed spring tab on the door guide sleeve adjacent the top thereof and a vertically offset outwardly directed spring tab on the door guide adjacent the bottom thereof so that the anti-wobble means serves to take up the clearance between the two members.

3,842,543
GRINDING MACHINE

Frederick A. Hohler, Holden, and Edmund E. Wlodyka, Saxonville, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Continuation of Ser. No. 85,777, Oct. 30, 1970, abandoned, and a continuation of Ser. No. 710,123, March 4, 1968, abandoned. This application Apr. 13, 1972, Ser. No. 243,832
Int. Cl. B24b *7/00, 9/00, 17/00*
U.S. Cl. 51—5 **6 Claims**



1. A grinding machine, comprising
   a. a workhead for holding and rotating a workpiece having a portion which is to be formed with a surface of revolution of non-cylindrical form,
   b. a wheelhead for holding and rotating a first abrasive wheel having a surface of the same non-cylindrical form and a second abrasive wheel, the two wheels being in axially spaced relationship, the surface of the second

abrasive wheel duplicating a special portion of the surface of the first abrasive wheel, which portion is to be finished with a better quality than the remainder,

c. feed means to move the workhead and wheelhead relative to one another to introduce the abrasive wheel to the workpiece for a plunge grind with a predetermined controlled force,

d. a dresser having an operative surface of the same non-cylindrical form located adjacent the workhead and wheelhead, the dresser being provided with a wheel having a surface of revolution of non-cylindrical form similar to that of the wheel, the wheel being rotatably driven about the major axis of the surface of revolution, the wheel consisting of a matrix in which are embedded a number of diamonds,

e. a second dresser axially spaced from the first abovementioned dresser for dressing the second abrasive wheel, and

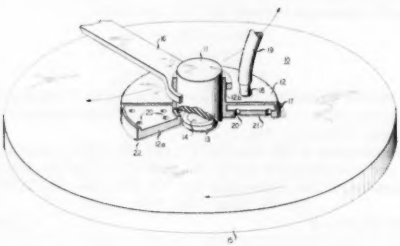
f. means serving to introduce the rotating abrasive wheel to the dresser while rotating the dresser in the opposite direction to that of the wheel for restoring the abrasive wheel accurately to the said non-cylindrical form after the said plunge grind.

3,842,544

FIXTURE FOR LAPPING AND POLISHING SEMICONDUCTOR WAFERS

Carl Ralph Paola, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1973, Ser. No. 415,946
Int. Cl. B24b *7/00, 47/02, 1/00*
U.S. Cl. 51—129 **8 Claims**



1. Apparatus for removing material from a major surface of a semiconductor wafer comprising:

a. an abrasive disk;

b. means for rotating the disk;

c. a work holder assembly mounted above the surface of the disk; and

d. means for moving the assembly reciprocally across the surface of the disk, the work holder assembly comprising:

a. a disk-shaped pad having:

1. at least one opening through its thickness;

2. a sleeve portion around the opening; and

3. a surface, at least a portion of which defines a plane parallel to the plane of the wafer that is to result upon removal of the material; and

b. a cylindrical piston, to which the wafer may be secured, slidably mounted in the sleeve portion so as to bring the major surface of the wafer in contact with the abrasive disk,

characterized in that the pad includes means for introducing a fluid between the surface of the pad and the rotating abrasive disk at a pressure sufficient to maintain the pad above the disk at a gap equal to at least 2.5 times the particle size of the abrasive, the means for introducing the fluid including:

a. a plenum chamber within the pad;

b. an opening in the pad for introducing the fluid into the plenum chamber; and

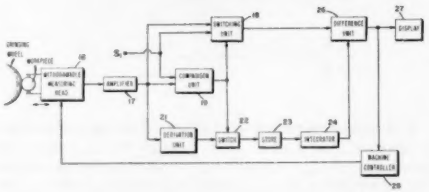
c. a multiplicity of openings in the bottom surface of the pad for introducing the fluid between the surface of the pad and the disk.

3,842,545

CONTROL METHOD AND APPARATUS FOR A MACHINE IN PARTICULAR FOR A GRINDING MACHINE

Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs, Bentivoglio, Italy

Filed Dec. 6, 1972, Ser. No. 312,758
Claims priority, application Italy, Dec. 7, 1971, 3585/71
Int. Cl. B24b *49/02*
U.S. Cl. 51—165.71 **8 Claims**



1. A method for use with a machine tool apparatus having means for machining a workpiece and means for measuring the dimensions of the workpiece being machined comprising:

generating a measurement signal depending on the dimensions of the workpiece being machined;

controlling withdrawal of the measuring means at a point of the machining cycle before said measurement signal reaches the value corresponding to the required final dimensions of the workpiece;

processing the values of the measurement signal generated at the time of withdrawing the measuring means, for generating a control signal varying thereafter with a law analogous to that of said values of the measurement signal generated at the time of withdrawing;

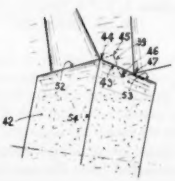
utilizing said control signal for automatically controlling the completion of the machining of the workpiece.

3,842,546

METHOD OF RE-SHARPENING PINION TOOLS

Pierre A. Ramond, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt Hauts de Seine, France

Division of Ser. No. 39,969, May 25, 1970, Pat. No. 3,720,989.
This application Feb. 6, 1973, Ser. No. 330,065
Claims priority, application France, June 16, 1969, 69.19904
Int. Cl. B24b *1/00, 3/12*
U.S. Cl. 51—288 **2 Claims**



1. A method of re-sharpening pinion tools, comprising: grinding the pinion tool using a grinding wheel having the

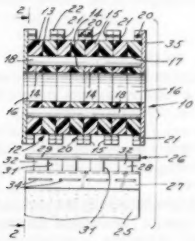
shape of a pair of conical frustums having a common major base, the leading face of a tooth of said pinion tool being ground with one of the conical faces of said wheel while the other conical face of said wheel forms a continuous connecting face with the next adjacent tooth of said pinion tool, and a radius of the major base of the wheel is linearly coincident with the radius of the pinion tool which passes through the apex of one of the edge angles of the tooth bottom of the pinion tool which is being ground.

3,842,547

HINGE TYPE FILL UNIT WITH INTEGRAL PIN CONSTRUCTION FOR CYLINDRICAL HUB UNITS

James A. Belanger, Livonia, Mich., assignor to Belanger Inc., Northville, Mich.

Filed Feb. 8, 1973, Ser. No. 330,630
Int. Cl. B24b *9/02*
U.S. Cl. 51—334 **10 Claims**



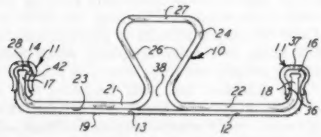
1. A finishing unit comprising fill material to be mounted in a position radially outwardly of the axis of a rotary driver structure, and a unitary member for supporting and so mounting said fill material on such structure, said member being in a solid cross-section throughout in a plane at 90° to said axis as thus mounted and presenting a radially outer portion secured to said material, a radially inner, axially extending and transversely enlarged bead-like mounting portion integral with said outer portion and adapted for a mating engagement with said driver structure, and an intermediate neck portion integrally connecting said bead-like and radially outer portions, said neck portion having at least one opening between integral axially spaced neck elements thereof to afford clearance for a free swing of said unitary member on said driver structure about said bead-like portion as an axis.

3,842,548

RELEASABLE SHEET HOLDER

Edwin B. Stoneburner, Racine, Wis., assignor to Printing Developments, Inc., Racine, Wis.

Filed Nov. 1, 1973, Ser. No. 411,834
Int. Cl. B24d *15/00*
U.S. Cl. 51—392 **12 Claims**



1. A releasable sheet holder comprising a body piece of generally a W shape, a platen portion included in said body piece and extending throughout the area of said body piece at one side thereof and having a face for presenting a backing support for a sheet lying across said platen portion, the two ends of said body piece at opposite sides thereof being upturned ends extending offset from the plane of said face to present the two outer legs of the W shape and to engage the opposite ends of a sheet which is extending across said platen and is draped over said two ends, a handle portion included in said body piece and extending centrally thereon to present the center section of the W shape, and a U-shaped clip releasably disposed on each of said two legs and being positionable over the respective opposite draped ends of the sheet for holding the sheet to said body piece.

3,842,549

SANDPAPER HOLDER BLOCK

James R. Johnston, 6665 Brooklyn Ave., San Diego, Calif. 92114

Continuation of Ser. No. 300,449, Oct. 25, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,169
Int. Cl. B24d *15/04*
U.S. Cl. 51—392 **2 Claims**

1. A sandpaper holder block comprising:

first and second mating sections, each of said first and second mating sections defining a contiguous head portion and handle portion;

first and second recesses in the head portions of said first and second mating sections, said first and second recesses cooperating to define an anvil groove when said first and second mating sections are assembled;

an anvil having a protuberance extending therefrom dimensioned for and being received by said anvil groove;

coupling means coupled to the head portions of said first and second mating sections for coupling said first and second mating sections together and clamping and holding said protuberance within said anvil groove; and

first and second clamp blades carried by said head portion and dimensioned for receiving sandpaper between said head portion and said clamp blades and around said anvil.

3,842,550

AIR SUPPORTED METAL ROOF AND METHOD OF RAISING AND LOWERING

William L. Duquette, P.O. Box 583, Newark, Calif. 94560

Filed Oct. 23, 1973, Ser. No. 408,511
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **10 Claims**

1. A building structure comprising:

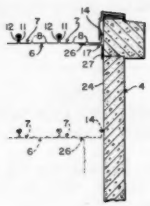
a. an air impermeable floor;

b. a pair of parallel substantially planar air impermeable side walls;

c. a metal membrane forming the roof and end walls dimensioned to register with and form a sliding relatively air tight seal with said side walls in forming an enclosed building space;

d. said metal membrane consisting of a plurality of channel-shaped side ribbed, elongated panels arranged with their longitudinal axis parallel to said side walls and having an unbroken length equal to the length to said roof and end walls;

e. said panels having parallel upstanding sides terminating in outwardly and downwardly curved flanges of dissimilar radii;



f. said panels being mechanically joined at their sides by positioning said curved flanges one within the other and mechanically reducing the radii of said larger flange until said flanges are in interlocking relationship; and

g. means for raising the pressure inside said building above the outside pressure sufficient to raise said membrane above said floor and maintain said membrane above said floor.

3,842,551

DRYWALL JOINT SYSTEMS AND METHOD FOR MAKING THE SAME

John D. Shull, Jr.; Richard E. Smith, both of Tonawanda; Joseph W. Schneller, Williamsville, and William R. Burke, Tonawanda, all of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Division of Ser. No. 844,306, July 24, 1969, Pat. No. 3,576,091. This application Jan. 13, 1971, Ser. No. 106,169

Int. Cl. E04b *2/72*

U.S. Cl. 52—127 **8 Claims**

1. A wallboard for forming a simulated monolithic wall comprising a generally rectangular panel having a substantially flat front surface and edge surfaces substantially perpendicular to said front surface and a layer of a set thermoplastic adhesive substantially completely covering each longitudinal edge surface of said panel, said thermoplastic adhesive forming substantially 90° corners at the junctions of said front surface and each of said perpendicular edge surfaces, said generally rectangular panel consisting of a set gypsum core enclosed on its two opposite sides and two longitudinal edges by a paper facing layer, said paper being free of said thermoplastic adhesive throughout a major portion of said front surface.

3,842,552

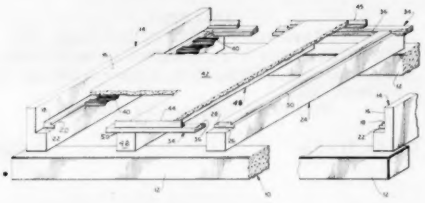
BRIDGE CONSTRUCTION USING PRECAST CURB AND EDGE BEAM

William D. Hudson, c/o C. W. Matthews Company Drawer 970, Marietta, Ga. 30060

Filed Aug. 30, 1973, Ser. No. 393,221

Int. Cl. E01d *7/00*

U.S. Cl. 52—174 **3 Claims**



1. In a bridge construction:

a. a bridge support substructure to elevate the bridge,

b. a transverse bridge support structure extending transversely across the substructure,

c. a precast exterior beam on one side of said bridge extending longitudinally therealong and including a precast curb and a projecting ledge to support a concrete slab to be poured thereon,

d. an interior beam extending parallel to and co-extensively with said exterior beam and having a ledge precast thereon and extending longitudinally along the edge thereof and offset portions on each end,

e. a transverse precast edge beam positioned in the offset portions of said exterior beam and interior beam and having an upstanding edge therewith to determine the edge of the concrete slab poured therein,

f. there being precast edge beams spaced from each other on opposite ends of said exterior and interior beams to define a space for the slab, and

g. a slab form positioned on the ledges defined by said exterior beam, said interior beam and said precast edge beams.

3,842,553

AIRLINE PASSENGER BUILDING

Karl Lennart Billgren, Stockholm, Sweden, and Hans Hansson, Hantverkargatan 11, S-112 21 Stockholm, Sweden, assignors to Said Hans Hanson, by said Karl L. Billgren

Filed Mar. 15, 1973, Ser. No. 341,603

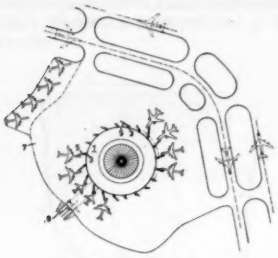
Claims priority, application Sweden, Mar. 20, 1972, 3562/72

Int. Cl. E04h *6/00*

U.S. Cl. 52—175 **16 Claims**

1. An air passenger building having an arrival hall and a departure hall, said building comprising docking places for airplanes distributed substantially along the whole outer periphery of said building, a plurality of gate sections extending substantially along said outer periphery which include entrances leading radially inwardly from said airplane docking places to said departure hall, said departure hall and said arrival hall being on different levels and each having adjacent traffic loops associated therewith disposed substantially along said whole outer periphery, wherein a check-in area is located centrally of said building and extends upwardly to the roof thereof to provide a light shaft, passenger passport and customs control points and baggage claim points being arranged circumferentially in said building so that all passenger move-

ments will occur essentially in radially extending directions, first inwardly towards said departure hall and then outwardly



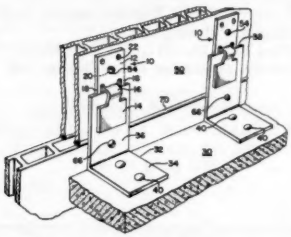
away from said departure hall, the movements occuring essentially in the center of said building.

3,842,554

CURTAIN WALL AND MOUNTING CLIP THEREFORE

Edwin Grant Swick, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 20, 1973, Ser. No. 371,808
Int. Cl. E04b 2/88, 1/40
U.S. Cl. 52—235 6 Claims



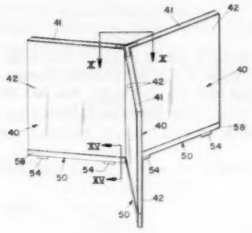
1. A structure including a support means, panel means to be disposed in angular relationship to said support means and load-bearing means for supporting said panel in such angular relationship, including and L-shaped angle iron having its base secured to said support means and its upstanding flange angularly disposed relative to the base thereof, one-piece clip means having first and second planar elements disposed in spaced parallel relationship and interconnected at their adjacent ends by substantially rigid integral means, the first planar element having means for engaging and being fixed to said panel and abutment means for engagement with the free edge of said upstanding flange, said abutment means includes coplanar means extending axially from said first planar element in the direction of said second planar element and positioned on opposite sides of said connecting means for engaging the free edge of said flange at spaced points, said panel being adapted to be juxtaposed to one face of said upstanding flange while the second planar element of said clip engages the opposite face of said flange to retain the panel in supported and laterally restrained relationship to said angle iron.

3,842,555

PARTITION CONNECTOR SYSTEM

Donald D. Korell, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed June 18, 1973, Ser. No. 370,976
Int. Cl. E04b 2/82
U.S. Cl. 52—238 13 Claims



1. An apparatus for connecting panels in a modular office system including male and female connector members adapted for mating engagement to secure adjoining panels, said male connector comprising:

an elongated body member, said body member having an upper and lower surface and adapted for connection to a first panel;

a flange extending outwardly at one end of said body member from said lower surface; and

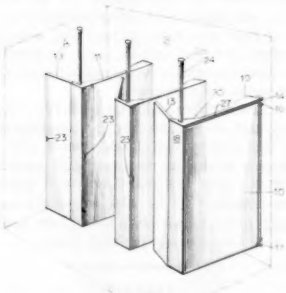
a tapered boss extending upwardly from said flange; said female connector including an elongated body member adapted for connection to a second panel and having an outwardly extending flange thereon, said flange having a tapered opening therein adapted to receive said boss whereby said male and said female connectors may be secured together to thereby connect adjacent panels.

3,842,556

PARTITION MADE OF FOAM MATERIAL

Thomas Brendgord, Erie, Pa., assignor to General Partitions Mfg. Corporation, Erie, Pa.

Filed Oct. 16, 1972, Ser. No. 297,965
Int. Cl. E04b 2/72; E04c 2/38
U.S. Cl. 52—239 3 Claims



1. A partition comprising integral panels,

said panels being relatively thin wall sections and having a flange integrally attached at their front edges,

said flange extending generally at right angles to said wall sections and forming a door jamb,

means for hinging a door to the distal edge of said flange, said flange having a recess receiving the back part of said door,

and gusset means integrally attached to said flange and to the upper edge of said wall sections disposed generally perpendicular to said flange and integrally attached to said wall sections and perpendicular thereto and said flange being generally flush with the upper edges of said wall sections,

and second gusset means underlying said flange and underlying said wall sections, and underlying said door whereby said door is supported.

3,842,557

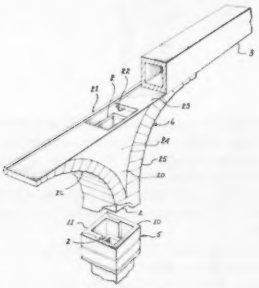
MODULAR BUILDING FACADE

Loren W. Brown, 3013 N. Flanwill Blvd., Tucson, Ariz. 85716

Filed May 25, 1973, Ser. No. 363,865

Int. Cl. E04c *3/36*

U.S. Cl. 52—301 **10 Claims**



1. A modular facade for circumscribing roof supports and extending upwardly to a supported roof beam to provide an aesthetically attractive appearance to the roof support and the junction between the roof support and roof beam, said facade comprising in combination:

a. a multi element sleeve circumscribing each roof support to hide the roof support from view, said multi element sleeve being dismantleable to receive the roof support;

b. locking means forming a part of each element of said sleeve for retaining the elements of said sleeve secured to one another about the post support, said locking means being disposed within said sleeve and concealed from view;

c. a multi element junction member for providing an aesthetically pleasing transition from said sleeve to the roof beam, said junction member including a lower part circumscribing the roof support about its longitudinal axis and an upper part extending lateral to the roof support for attachment to the roof beam;

d. said junction member including further locking means for retaining said junction member juxtaposed with the upper part of the adjacent one of said sleeves; and

e. attachment means for securing said junction member adjacent the roof beam; whereby, said sleeve and said junction member can be attached to existing roof supports supporting a roof beam to alter the aesthetic value of the roof supports and the roof beam.

3,842,558

WALL ATTACHMENT SYSTEM

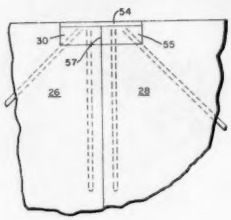
Ray John Scholz, and Thomas Patrick Fuller, both of Los Altos, Calif., assignors to Printex Concrete Products, Santa Clara, Calif.

Filed May 30, 1972, Ser. No. 257,569

Int. Cl. E04c *2/06;* **E02d** *27/00*

U.S. Cl. 52—293 **6 Claims**

1. A wall attachment arrangement comprising a plurality of precast concrete panels, said panels supported on edge in an upright position end to end to form the walls of the structure, a plurality of weld plates, each of which is cast in place at a remote end of a horizontal edge of the upright panels, each weld plate having a web portion joining two opposing flange portions and having means for rigidly mounting said weld plates to said concrete panels so that said webs are substantially parallel to one another yet integrally joined to said



mounting means, so that when said mounting means are embedded in said panel internal columnar support is provided for said weld plates;

a plurality of connecting plates, each of said connecting plates weldably joined to and in substantial parallel alignment with the web portions of weld plates mounted on adjacent upright panels.

3,842,559

GLASS-FIBER-REINFORCED GYPSUM ROOF DECK

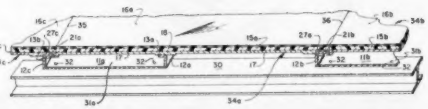
Harold J. W. Payne, Wirral, England, assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Sept. 29, 1972, Ser. No. 293,331

Claims priority, application Great Britain, Oct. 1, 1971, 45719/71

Int. Cl. E04c *2/04, 2/10*

U.S. Cl. 52—309 **15 Claims**

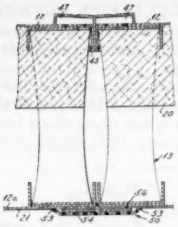


1. A roof deck structure comprising a plurality of tray units of glass-fiber-reinforced gypsum, and decking units also of glass-fiber-reinforced gypsum mounted above and secured thereto, the decking units each have an effective width twice the width of a tray unit and each comprises a substantially flat web, a central pedestal constituted by a thickened region of said web, and end connection portions; the connection portion at one end comprising a terminal shoulder extending horizontally from and beneath the flat web, and a channel extending lengthwise of the tray unit between said web and said terminal shoulder; and the connection portion at the other end comprising a thickened rib integral with the web, a tongue extending horizontally from said thickened rib and terminating with a depending rib which engages in a channel of the adjacent decking unit with said tongue resting upon the terminal shoulder of the adjacent decking unit.

3,842,560
INDUSTRIAL BUILDING CONSTRUCTION

Henry Fred Campbell, Belleville, Mich., assignor to Campbell Research Corporation, Detroit, Mich.

Filed Apr. 20, 1973, Ser. No. 352,904
Int. Cl. E04b 1/40
U.S. Cl. 52—468 5 Claims

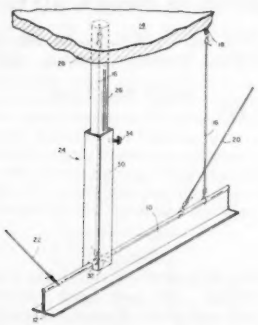


1. The combination comprising a plurality of substantially identical panels in side-by-side array,
each said panel comprising spaced flat sheets and a plurality of spaced trusses bonded to said sheets,
each said truss comprising spaced channels and an undulating member comprising alternating apices connected by leg members with the apices bonded to the channels,
each said channel having a base portion and flange portions, each said panel having a truss along a longitudinal edge thereof such that the flanges of adjacent channels of the trusses of adjacent panels extend parallel to one another in side-by-side relation,
and means defining a seal joint between adjacent panels comprising a member which has a generally T-shaped section including a web extending between the flanges of adjacent panels and engaging the free edges of said flanges of said adjacent channels and arms extending laterally outwardly and engaging the outer surfaces of the sheets of said panels.

3,842,561
ADJUSTABLE CEILING STRUT

Mynin Wong, 251 Upland Rd., Redwood City, Calif. 94062

Filed June 14, 1973, Ser. No. 370,132
Int. Cl. E04b 5/55
U.S. Cl. 52—484 4 Claims

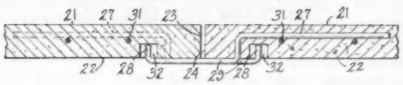


1. In a false ceiling comprising a grid formed of a plurality of inverted T-shaped runners, a plurality of ceiling panels insertable in the grid and supported thereby, and wires suspending the grid from a true ceiling, the improvement comprising:
a telescopic strut comprising a hollow cylindrical rod having an upper end adapted to abut the true ceiling and a hollow square sleeve adapted to end fit slideably over the lower end the rod in continuous frictional contact therewith, said sleeve having a slot spanning the width of the lower end thereof and adapted to engage one of the runners; and
means for fixing the length of the telescopic strut after engaging the runner with the slot,
whereby vertical translation of the false ceiling during seismic disturbances is prohibited.

3,842,562
INTERLOCKING PRECAST CONCRETE SLABS

John P. Daigle, Trumbull, Conn., assignor to The Veggo F. Larsen Co., Hamden, Conn.

Filed Oct. 24, 1972, Ser. No. 299,683
Int. Cl. E04c 2/06
U.S. Cl. 52—583 14 Claims

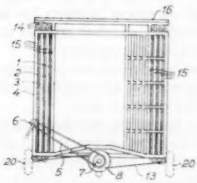


1. In a precast concrete slab for connection with other said slabs to form a generally horizontal, stable, load bearing surface, the improvement which comprises a plurality of rods firmly embedded in said slab and a plurality of cavities in the lower face of said slab and spaced from the adjacent edges thereof, said rods providing a plurality of first hooked end portions projecting beyond a first end wall of said slab adjacent the plane of said lower face and a plurality of second hooked end portions projecting beyond an opposing end wall of said slab also adjacent the plane of said lower face, said end walls corresponding to said adjacent edges, said hooked end portions being adapted to lie beneath a peripheral edge portion and to be received in said cavities of an adjacent slab having similar hooked end portions and cavities, said cavities and said hooked end portions of each slab corresponding in number, whereby a plurality of said slabs are interlockable end to end by a scissor action to form a strip of slabs.

3,842,563
EXTENSIBLE SCAFFOLD

Knud Rasmussen, Koge, Brogade 16, Denmark

Filed Nov. 14, 1972, Ser. No. 306,186
Claims priority, application Denmark, Nov. 17, 1971, 5639/71
Int. Cl. E04g 1/18
U.S. Cl. 52—645 5 Claims



1. A telescoping scaffold comprising
a. a number of scaffold sections including a base section, at least one intermediate section, and a top section, each section comprising a number of upright tubular corner posts, and each intermediate and top section being telescopically arranged within a lower adjacent section with

a loose fit so as to provide a transverse clearance between adjacent corner posts of such adjacent sections,

b. pulley means mounted at the upper end of said base section and at the lower and upper ends of said intermediate section or sections,

c. lift cable means extending about said pulley means and through said corner posts and connected to the lower end of said upper section,

d. means mounted on said base section and connected to the lower ends of said cable means for manually pulling each of said cable means uniformly about said pulley means thereby to move one or more of said top and intermediate sections upwardly to extend the scaffold, and

e. means for selectively and releasably locking adjacent sections together in various mutual positions.

3,842,564

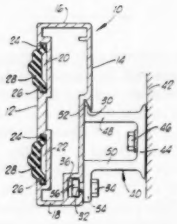
SHOCK ABSORBING RAIL ASSEMBLY

Russell L. Brown, P.O. Box 14546, Oklahoma City, Okla.

Filed July 3, 1972, Ser. No. 268,480

Int. Cl. E04f *19/02*; **E04h** *17/24*

U.S. Cl. 52—716 **8 Claims**



1. A rail assembly comprising:

a hollow, elongated, rigid supporting member having at least one bumper strip receiving channel on one side thereof, having an elongated groove in another side thereof and extending substantially parallel to the bumper strip receiving channel, and having formed therein, a nut-receiving channel for slidably receiving nuts, said nut-receiving channel having a slot opening thereinto through said rigid supporting member and extending over the length of said nut-receiving channel, said supporting member completely enclosing said nut-receiving channel except for said slot opening thereinto;

a plurality of polygonally shaped nuts slidably positioned in said nut-receiving channel in a position preventing rotation of said nuts in said channel;

a resilient bumper strip mounted in and protruding from each of said bumper strip receiving channels;

a plurality of mounting brackets for positioning said supporting member in spaced relation to a wall, said mounting brackets each including:

a base portion adapted for securement to a wall;

a mounting portion adapted for securement to said rigid supporting member; and

web means extending between and interconnecting said base portion and said mounting portion;

said mounting portion being further characterized in including:

a flange having a bolt aperture therethrough for receiving a bolt extending through said slot into said nut-receiving channel; and

a surface complementary in configuration to said elongated groove for mating with and detachably engaging said groove; and

bolts extending through said bolt receiving apertures in the mounting portions of said mounting brackets and engaging said polygonally shaped nuts, said bolts cooperating with said engaged groove and complementary surface for retaining said rigid supporting member in a selected position on said mounting brackets.

3,842,565

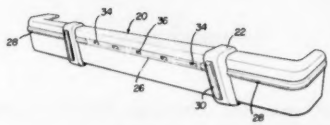
RESILIENT BUFFER ASSEMBLY

Martin M. Brown, Birmingham, and Lawrence Krawczak, Detroit, both of Mich., assignors to Robin Products Company, Warren, Mich.

Filed May 21, 1973, Ser. No. 362,638

Int. Cl. B60r *19/08*; **E04c** *2/44*; **E04f** *19/02*

U.S. Cl. 52—716 **13 Claims**



1. A trim and panel assembly, comprising, in combination, a panel support having a predetermined thickness, a rectangular aperture in said panel, a resilient polymeric trim member having a base overlying one face of said panel and an integral hollow tubular connector disposed within said aperture and retaining said trim member to said panel, said connector having generally parallel side walls, parallel to the side edges of said rectangular aperture and inwardly concave end walls integral with said side walls, and locking projections on each of said side walls, each of said locking projections having a camming face inclined outwardly from the distal end of said connector and a locking face overlying said trim member, said locking face engaging said side edges of the aperture on the opposed face of said panel, said concave walls of said hollow tubular connector sufficiently resilient to resiliently collapse inwardly upon biasing inwardly of said locking projections, whereby said camming faces of said hollow connector engage the opposed side edges of said aperture, resiliently collapsing said concave walls inwardly to receive said locking faces against the opposed edges of said aperture, retaining said trim member to said panel.

3,842,566

SERIAL HOUSING UNITS CONSTRUCTION PROCESS

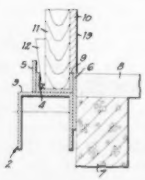
Robert A. Demanet, rue Miserque 9, 6419 Marbaix-la-Tour, Belgium

Filed Aug. 21, 1973, Ser. No. 390,233

Claims priority, application Belgium, Aug. 22, 1972, 787817

Int. Cl. E04g *21/22*

U.S. Cl. 52—747 **6 Claims**



1. Serial housing units construction process characterized in that it substantially consists in determining the exact layout of a housing unit by means of a mobile gage; in attaching supports on the periphery of the site thus defined and in fitting,

on these supports, a U-shaped straight section frame; in filling the space limited by said frame with a filling that will form the circulation area; in fitting into said frame the guide partitions whose face turned towards the inside of the housing unit will limit the surface of the outer walls to be set up; in setting up said walls by means of joined blocks arranged in superposed continuous rows; in forming continuous joints by pouring a generally cement-based compound continuously along each row of blocks by means of an appropriate distributor system; in previously fitting in appropriate places, against the inner face of said guide partitions, the mountings or frames for doors and windows and in assuring, while setting up the walls, a solid fixation between these walls and said frames or mountings; finally, in placing and fitting the roof generally fabricated close to the housing unit and in bringing said roof into correct position by means of an appropriate hoisting device.

3,842,567

MULTIPLE PANE UNITS

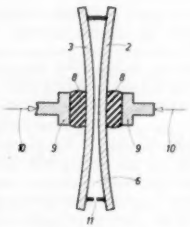
Jacob Zwart; Hugo-Guido Wielockx, both of Balen-Neet, and Gaston-Hugo Guens, Mol, all of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed June 14, 1972, Ser. No. 262,551

Claims priority, application Luxembourg, June 18, 1971, 63369

Int. Cl. B65b *31/04*

U.S. Cl. 53—7 **11 Claims**



1. A method of conditioning the internal pressure in a multiple panel unit composed of at least two spaced sheets, each composed of glass, plastic or vitrocrystalline material, and sealing means which includes at least one spacer connected to margins of the sheets for enclosing the interior space between each adjacent pair of sheets, comprising temporarily exerting a flexing force on at least one of the sheets via mechanical means in contact with a face of such sheet constituting an external face of the unit, the force being directed toward the interior of the unit so as to reduce the volume of at least one interior space and, during the period of time for which such sheet is held elastically flexed, placing the at least one interior space in communication with a gaseous medium which is outside the unit under pressure and temperature conditions such that gaseous medium flows from the space to the region outside the unit to bring the pressure in the space to a required lower value, such communication being established at least during said step of exerting a flexing force, and terminating such communication before removing such force.

3,842,568

METHOD OF PACKAGING FLEXIBLE PLASTIC BAGS

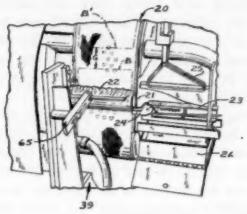
Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Apr. 24, 1972, Ser. No. 246,554

Int. Cl. B65b *63/04*

U.S. Cl. 53—21 FW **11 Claims**

1. A method of packaging flexible plastic bags comprising the steps of sequentially advancing bags along a predetermined path, reeling each bag upon itself about a mandrel disposed generally tangent to said path, gripping an edge portion of the reeled bag and moving the same transverse to said path to clear said path and thereafter releasing the grip thereon, and tamping said reeled bag into a case by movement parallel to said path, said mandrel having air passages confronting the leading edge portion of the bag and which



portion develops the inner convolution of said reeled bag, and which further includes reducing the air pressure in said passages below atmospheric at the beginning of said reeling and thereafter just prior to said transverse moving increasing the air pressure in said passages to above atmospheric.

3,842,569

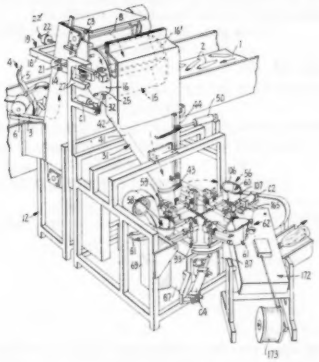
CARROT BAGGING APPARATUS AND METHOD

Etheridge R. McClelland, Livermore; Henry L. Spence, Pleasanton; Henry R. Vierra, Hayward, and Thomas J. White, San Ramon, all of Calif., assignors to Filper Corporation, San Ramon, Calif.

Filed June 7, 1973, Ser. No. 367,733

Int. Cl. B65b *5/06*

U.S. Cl. 53—37 **20 Claims**



1. The method of packaging carrots and the like comprising the steps of:

a. supporting a plurality of carrots on their sides for continuous movement along a horizontally extending path of travel with their longitudinal axes in indiscriminate arrangement, and so moving said carrots;

b. discharging carrots from said plurality laterally from said path at a point along the latter;

c. moving the carrots so discharged from said path away from the latter and at the same time orienting them to align their longitudinal axes in the same direction; and thereafter

d. conducting the carrots so oriented one after the other on their sides along a path extending at a right angle to their said axes to an accumulating point;

e. accumulating said carrots, one at a time, in side-by-side relation at said accumulating point in a group of a predetermined minimum weight with their said axes extending horizontally; then

f. discharging said group from said accumulation point under the influence of and in response to said predetermined minimum weight for falling by gravity from said point and orienting the group during falling from said point to position the said axes of the carrots of said group to vertically extending positions;

g. receiving said group in a vertically elongated bag of greater length than the maximum height of said group below said accumulation point and supporting said bag with the carrots of said group upright therein and supported on the bottom of said bag for movement along a horizontally extending path to a sizing station;

h. reducing the carrots of said group to an approximately uniform height at said sizing station by removing the upper portion of any carrot in said group projecting above a predetermined maximum level; and then

i. gathering the upper portion of said bag above the carrots of said group and securing said upper portion closed over said group.

3,842,570

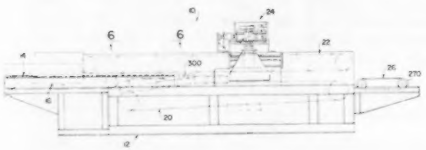
HIGH SPEED TRAY FORMER AND LOADER

Alfred C. Monaghan, Warren, N.J., assignor to Monaghan Automated Systems Inc., Green Brook, N.J.

Filed Jan. 19, 1973, Ser. No. 325,086

Int. Cl. B65b *11/08, 35/30*

U.S. Cl. 53—26 **11 Claims**



1. In apparatus for erecting tray blanks and filling trays with articles and wherein groups of articles spaced longitudinally from each other are moved longitudinally on a fixed course, a tray erecting form means,

means for longitudinally moving the tray erecting form means

means positioning said tray erecting form means below a group of articles, a tray blank being positioned on said tray erecting form means,

article depressing means for moving longitudinally with the group of articles, and

driven pusher means carried by said article depressing means and being movable vertically downwardly of the apparatus, such pusher means being adapted to engage the articles and force them and their supporting tray blank downwardly into said tray erecting form means.

3,842,571

APPARATUS FOR FILLING CARTONS AND THE LIKE WITH OBJECTS, FOR EXAMPLE BOTTLES

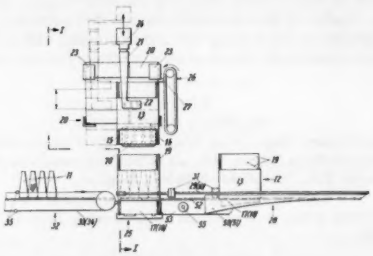
Heinz-Hermann Focke, and Kurt Willy Liedtke, both of Verden/Aller, Germany, assignors to Focke & Pfuhl, Verden-/Aller, Germany

Filed Feb. 27, 1973, Ser. No. 336,131

Claims priority, application Germany, Feb. 28, 1972, 2209370

Int. Cl. B65b *21/06, 43/30, 7/20*

U.S. Cl. 53—186 **17 Claims**



1. In a device for packing groups of articles, for example, bottles in containers of foldable material, more particularly cartons open at the bottom and having closing flaps to close the same, said device including a horizontal conveyor on which the groups of articles to be packed are located during introduction into the containers; means for moving the containers and the groups of articles to be packed relative to one another during introduction of the groups bottles into the containers; a magazine for storing flat, collapsed containers located above the horizontal conveyor; means for removing containers from the magazine and unfolding same; a stationary filling platform for a group of articles in the plane of the horizontal conveyor; the improvements comprising: (a) a stationary supporting part; (b) a movable supporting part (37) of the stationary filling platform (25) corresponding at least to the size of a rearward bottom flap (15) of said carton and facing towards the same; (c) means to fold the rearward bottom flap (15) against the underside of the supporting part (37); (d) means to move said supporting part from its supporting position into a position which is remote from the rearward bottom flap (15) in such a way that the entire surface of the bottom flap (15) may be thrust against the underside of the group (11) of article to be packed; (e) means to transport packed groups of articles from said stationary filling platform to a storage station; and (f) a lowering conveyor which transports unfolded containers from the magazine to the groups of article to be packed.

3,842,572

BANDING MACHINES

Anthony R. Burge, Watford, England, assignor to Crosfield Business Machines Limited, Watford, England

Filed Jan. 16, 1973, Ser. No. 324,161

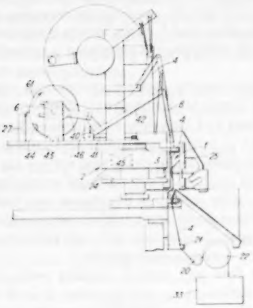
Claims priority, application Great Britain, Jan. 18, 1972, 2394/72

Int. Cl. B65b *27/08*

U.S. Cl. 53—198 R **5 Claims**

1. A document banding machine for banding a sequence of documents comprising a rotatable vacuum drum for feeding the documents one by one into a banding station to form a stack or bundle of documents, a continuous banding strip extending across the banding station, a device movable from a first position in which the device peels documents away from the periphery of the vacuum drum to a second position in which the device holds the bundle of documents against a rigid

backing member, an acutator for moving the device from its first position to its second position after a predetermined number of documents have been stripped from the drum, the movement of the device urging the bundle of documents across the path of the continuous banding strip such that a



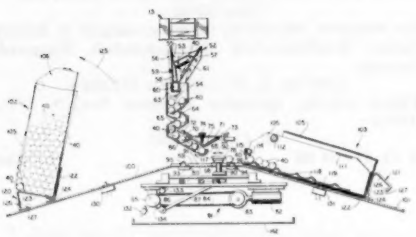
portion of the strip is deflected out of its path around the front of the bundle, a reciprocating guide member movable from a first position to a second position to guide the strip around the back of the bundle and to reunite the strip along the path, and a bonding device for bonding the resulting overlapped portions of the strip to one another.

3,842,573

METHOD AND APPARATUS FOR PACKAGING COINS

Robert K. Price, Peachtree City, Ga., assignor to Currency Systems, Inc., Atlanta, Ga.

Filed Jan. 29, 1973, Ser. No. 327,822
Int. Cl. B65b *1/04, 57/18, 19/04*
U.S. Cl. 53—35 **8 Claims**



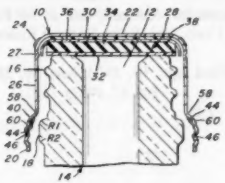
1. A method of placing approximately cylindrical packages of coins or the like in containers comprising the steps of arranging the packages in parallel relationship with respect to one another along an approximately horizontal path extending across the length of the packages, moving the packages along the approximately horizontal path to an inclined path, transferring the packages from the approximately horizontal path to the inclined path, moving the packages up the inclined path toward the upper end of a hopper while maintaining the packages parallel to one another, arranging the packages horizontally and in parallel relationship with respect to one another in the hopper, continually dropping the packages from the lower end of the hopper to a transfer station, moving alternate ones of the packages dropped to the transfer station in opposite lateral directions toward containers, counting the packages as they move from the transfer station to a container, terminating the dropping and moving of the packages to one of or both of the containers after a predetermined number of packages moved toward the container have been counted.

3,842,574

METHOD FOR APPLYING A CONTAINER CLOSURE

John J. Dickey, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 212,235, Dec. 27, 1971, Pat. No. 3,771,683. This application July 18, 1973, Ser. No. 380,207
Int. Cl. B65b *7/28*
U.S. Cl. 53—42 **3 Claims**



1. A method of sealing a closure on a container comprising in sequence the steps of

providing a container having an entrance mouth with closure retaining means thereon and an outwardly projecting circumferential bead below said retaining means,

positioning a closure on the entrance mouth, said closure having a top end wall, a depending peripheral skirt extending therefrom including an upper portion, a land directed outwardly from the bottom of the upper portion and a band depending from an outer edge of the land,

said closure further having a sealing material disposed therein overlying the upper surface of said container bead,

forming said closure skirt against said retaining means on the container mouth,

applying substantially downward pressure against said closure skirt overlying the container bead to press the sealing material against the container bead, and

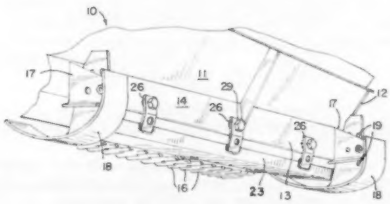
turning at least a portion of the band on the closure skirt under said container bead to hold the sealing material in the closure skirt pressed against the container bead.

3,842,575

ADJUSTABLE STONE SHOE FOR CROP HARVESTER CUTTER BAR

George B. Cicci, Broadview, and Thomas J. Scarnato, Barrington, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 20, 1973, Ser. No. 399,208
Int. Cl. A01d *55/14*
U.S. Cl. 56—307 **5 Claims**



1. For a crop harvester cutterbar of the type having cutting means and having at least a pair of ground-engaging gauge shoes located respectively approximate each end thereof, an adjustable stone shoe comprising a laterally elongated plate-like member having means for pivotally connecting one edge adjacent the front edge of the cutterbar, said plate-like mem-

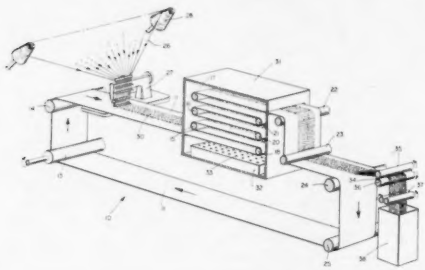
ber extending rearwardly under said cutterbar and extending laterally substantially the entire distance between said gauge shoes, and selectively vertically adjustable means for attaching the rear portion of said plate-like member to the rear side of said cutterbar.

3,842,576

METHOD AND APPARATUS OF MAKING CRIMPED YARN

Nathan Rosenstein, deceased, late of 66 Foxcroft Rd., West Hartford, Conn. 06119 (by Rachael Rosenstein, administrator)

Filed Apr. 19, 1973, Ser. No. 352,694
Int. Cl. D02g *1/00*
U.S. Cl. 57—1 R **24 Claims**



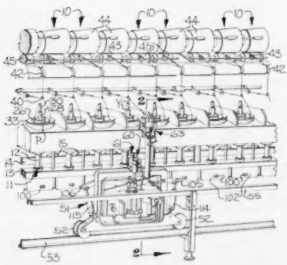
1. A method of making crimped yarn comprising the steps of sewing settable yarn into a backing layer in a manner to form the yarn into regularly spaced sharp bends, setting the yarn in that condition on the backing layer, and then removing the yarn from the backing layer.

3,842,577

APPARATUS FOR POSITIONING, STOPPING AND LOCKING OF A SERVICE CARRIAGE MECHANISM OF A TEXTILE YARN PROCESSING MACHINE

Gustav Franzen, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

Filed Oct. 24, 1973, Ser. No. 409,032
Claims priority, application Germany, Apr. 5, 1973, 2317052
Int. Cl. D01h *15/00, 9/14*
U.S. Cl. 57—34 R **23 Claims**



1. In a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assemblies mounted in side-by-side relationship longitudinally of said machine and which individually require servicing in the event of yarn breakage, exhausting of a supply package of yarn, etc.; the combination therewith of a movable service carriage mechanism carrying means for selectively servicing desired individual spindle assemblies, means mounting said service carriage mechanism for movement longitudinally along the front of said machine and said spindle assemblies, and means for positioning, stopping and locking said service carriage mechanism in a predetermined desired location at the front of a selected spindle assembly for servicing thereof, said positioning, stopping and locking means comprising:

a first locking component comprising a rotatably mounted roller;

a second cooperating locking component comprising at least one elongate member extending longitudinally of said machine and including a depression therein medially thereof for receiving said roller and cooperating therewith for stopping and locking said service carriage mechanism, and inclined guide surfaces extending longitudinally outwardly from said depression and forming generally an obtuse angle from said depression for contacting and guiding said roller into said depression or positioning said service carriage mechanism;

one of said first and second locking components being mounted stationary on said machine at each of said spindle assemblies in a predetermined position and the other of said first and second locking components being movably mounted on said service carriage mechanism for movement between an inoperative position away from contact with said stationary locking component when positioning, stopping and locking of said service carriage mechanism is not desired and an operative position for contact with said stationary locking component when positioning, stopping and locking of said service carriage mechanism is desired; and

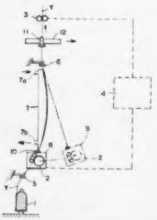
selectively operable means carried by said service carriage mechanism for resiliently moving said movable locking component into the operative position.

3,842,578

METHOD AND APPARATUS FOR THREADING YARN INTO A STRETCH AND FALSE TWIST CRIMPING MACHINE

Heinz Schippers, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Nov. 2, 1972, Ser. No. 303,086
Claims priority, application Germany, Nov. 9, 1971, 2155514
Int. Cl. D02g *1/02*
U.S. Cl. 57—34 HS **11 Claims**



1. A method of threading an apparatus for the simultaneous stretching and false-twist crimping of a yarn composed of synthetic thermoplastic filaments wherein the yarn is continuously conducted for stretching in a normal operating path between a stretch feed point and a stretch draw point while simultaneously being subjected to a heat treatment by direct contact with an elongated heating surface in said normal operating path and also imparting a false twist to the heat

treated yarn by means of a rotating false-twist spindle before the yarn reaches said stretch draw point, which process comprises:

first threading the yarn from said stretch feed point to said stretch draw point through said false-twist spindle and also through a movable guide point adjacent one end of said elongated heating surface, said guide point being initially maintained in a position such that the yarn runs in a preliminary operating path which is free of contact with said heating surface;

then conducting the yarn through said preliminary path while the speed of the false-twist spindle is substantially smaller than its normal operating speed;

thereafter moving said guide point to bring the yarn into its normal operating path in contact with said heating surface, the movement of said guide point being such that the yarn length between said stretch feed point and said stretch draw point remains substantially constant; and

subsequently increasing the speed of the false-twist spindle up to its normal operating speed.

3,842,579

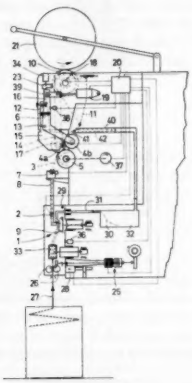
APPARATUS FOR TEMPORARILY STORING THREAD IN A SPINDLELESS SPINNING MACHINE

Gerhard Bartling, Burgstall/Murr, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Apr. 20, 1973, Ser. No. 353,109

Int. Cl. D01h *13/16*

U.S. Cl. 57—34 R **9 Claims**



1. Apparatus for temporarily storing excess lengths of thread formed on the turbine of a spindleless spinning machine for subsequent winding on a spool, comprising a hollow chamber located between the turbine and the spool having an opening located adjacent the path of the thread, a source of suction connected to said chamber, the magnitude of said suction being selected so that when the tension on said thread falls below a predetermined value, the thread is caused to be drawn as a loop into said chamber.

3,842,580

SUCTION MECHANISMS FOR YARN PROCESSING MACHINES

Gustav Franzen, Dusseldorf, Germany, assignor to Palitex Project-Company GmbH, Krefeld, Germany

Filed July 23, 1973, Ser. No. 381,767

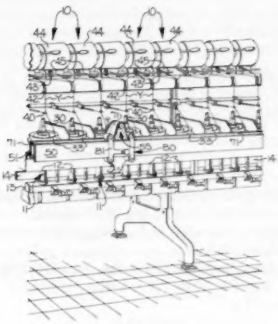
Claims priority, application Germany, July 28, 1972, 2237126

Int. Cl. D01h *15/00*

U.S. Cl. 57—34 R **13 Claims**

1. In a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assemblies positioned in side-by-side relationship for the processing of yarn; the improvement of:

suction conduit means mounted on said machine and extending generally horizontally along the front of said spindle assemblies and having a negative air stream therethrough, said suction conduit means having a plurality of apertures along the length thereof with one of said apertures being positioned at each of said spindle assemblies for causing a suction through each of said apertures;



a yarn knotter mechanism for knotting together two ends of broken or otherwise separated yarn and including means mounting said knotter mechanism on said machine for generally horizontal movement along said suction conduit means for positioning said knotter mechanism in front of a selected said spindle assembly for a yarn knotting operation, said mounting means comprising a carriage mechanism carrying said knotter mechanism and mounted on said conduit means for movement therealong, said knotter mechanism further including suction threading means forming a part thereof for mating communication with said aperture of said conduit means at said selected spindle assembly for creating a suction through said knotter mechanism threading means by the negative air stream in said conduit means for pulling and threading the separated yarn ends at said selected spindle assembly into and through said knotter mechanism; and

continuous elongate flexible belt means covering said plurality of apertures in said conduit means not in mating relation with said knotter mechanism threading means to prevent loss of suction in said conduit and for moving in cooperation with and by engagement of said knotter carriage mechanism for uncovering said aperture at said selected spindle assembly as said knotter mechanism is positioned by said carriage mechanism at said selected spindle assembly for allowing the mating communication between said uncovered aperture and said knotting mechanism threading means.

3,842,581

FALSE TWIST CRIMPER FOR TEXTURING SYNTHETIC FIBERS

Wolfgang Schedler, Reutte, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,475

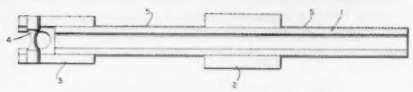
Claims priority, application Austria, Dec. 9, 1971, 10561/71

Int. Cl. D02g *1/06;* **B22f** *1/00*

U.S. Cl. 57—77.3 **12 Claims**

1. In a false twist crimping device for texturing synthetic textile fibers, the improvement which comprises a cemented carbide twist tube constructed principally of a sintered alloy comprising between about 43 and 89 parts by weight of a first metal carbide component having at least a major proportion of titanium carbide; between about 1 and 45 parts by weight

of a second metal carbide component containing at least a substantial proportion of material of the group consisting of molybdenum carbides, vanadium carbide and mixtures thereof; and between about 6 and 30 parts by weight of a



binder metal component containing at least a substantial proportion of material of the group consisting of iron, nickel, cobalt and mixtures thereof for cementing said carbide components.

3,842,582

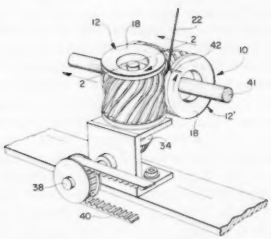
APPARATUS AND PROCESS FOR IMPARTING TWIST TO FILAMENTARY MATERIAL

Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Dec. 18, 1972, Ser. No. 316,242

Int. Cl. D01h *7/92;* **D02g** *1/08, 1/04*

U.S. Cl. 57—77.4 **13 Claims**



1. Apparatus for imparting twist to filamentary material comprising:

a pair of members,

each of said members provided with parallel projections along a surface thereof,

a section of each of said member surfaces adjacent to and in partial overlapping relationship to each other to define an area of overlap between said member surfaces whereby projections of each member are in meshed interdigitative relationship with each other within a portion of said overlapping area, said projections being spaced apart from each other at their points of closest opposition by a distance at least equal to the thickness of said filamentary material, said portion defining a zone of filamentary contact, and

a plurality of said projections contacting said filamentary material at spaced location on opposite sides thereof within said zone,

means for directing filamentary material across said projections and generally normal thereto within said zone and means for moving said member surfaces through said zone, said member surfaces further being disposed to each other so that planes respectively disposed normal to the direction of travel of each said member surface through said zone are disposed in non-parallel angular relationship to each other and

the projections of each of said members in angular relation to the respective plane normal to the direction of travel of the surface of its respective member.

3,842,583

YARN AND INFLATABLE BAG MADE THEREFROM

Thomas Barton Gage, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 30, 1972, Ser. No. 268,021

Int. Cl. D02g *3/44;* **B60r** *21/08*

U.S. Cl. 57—140 R **5 Claims**

1. A synthetic, multifilament, continuous filament yarn of poly(hexamethylene adipamide) having

a. a toughness of at least 1.5 gm. cm./den. cm.,

b. a tenacity of at least 4.0 gm./den. (gpd),

c. an initial modulus of less than 25 gpd, and

d. an elongation (at break) of at least 45 percent.

3,842,584

STRAND FOR A WIRE CABLE OF SYNTHETIC WIRES AND SYNTHETIC FIBRES

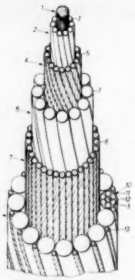
Hans-Richard Schmittman, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 13, 1973, Ser. No. 369,690

Claims priority, application Germany, June 29, 1972, 2231968

Int. Cl. D07b *1/06*

U.S. Cl. 57—146 **14 Claims**



1. A strand for a wire cable which comprises a core comprising a bundle of untwisted synthetic fibres, a layer of coarse synthetic wires spirally surrounding the core and at least one other layer of coarse wires concentrically and spirally surrounding the core, in which a layer of synthetic fibre bundles is arranged between the layers of coarse wires.

3,842,585

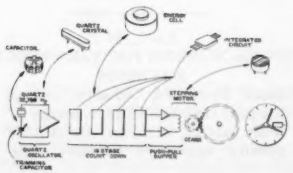
WATCH

Peter John Lupoli, Hamden, Conn., assignor to Benrus Corporation, Ridgefield, Conn.

Filed May 22, 1973, Ser. No. 362,736

Int. Cl. G04c *3/00;* **G04b** *37/00*

U.S. Cl. 58—23 R **1 Claim**



1. Shock resistant wrist watch having upper and lower generally horizontal faces, said watch having a crystal over its

upper face, strap fasteners at its far and near edges for securing a wristlet that will extend below the plane of its lower face, whereby said watch has high probability of some cushioning against impact when it falls in all solid angle orientations except the solid angle nearest the transverse horizontal axis, said watch having a quartz crystal frequency generator, said quartz crystal having its greatest dimension disposed substantially parallel to the watch's transverse horizontal axis, and said quartz crystal being supported by fine resilient metal lead wires, said lead wires comprising arms and wrists angled relative to each other and both the arms and the wrists lying substantially in a plane perpendicular to the transverse horizontal axis of the watch, the arms being substantially parallel to each other, and the wrists meeting the quartz crystal substantially perpendicular to its opposite side faces and terminating in butt joints securing the wrists to said faces, the relative orientations of the recited parts being such that the least vulnerable orientation of the quartz crystal assembly coincides with that orientation of the watch that is externally least protected from shock.

3,842,586

CRYSTAL ELECTRONIC TIMEPIECE

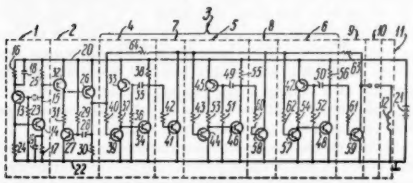
Shamil Akhmetovich Sharyapov, ulitsa Ketcherskaya, korpus 1, kv. 39; Boris Nikolaevich Konshin, Abelmanovskaya ulitsa, 29, kv. 12; Viktor Alexandrovich Ilin, ulitsa Gorkogo, 6, kv. 330; Vladimir Ivanovich Kalashnikov, ulitsa Dybenko, 38, kv. 51; Vladimir Alesandrovich Shpolyansky, 1 Ambulatorny proezd, 5, korpus 2, kv. 28, and Konstantin Petrovich Chirkin, Onezhskaya ulitsa, 28, kv. 85, all of Moscow, U.S.S.R.

Continuation of Ser. No. 313,878, Dec. 11, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,822

Claims priority, application U.S.S.R., Dec. 9, 1971, 1721461

Int. Cl. G04c *3/00;* **H03k** *21/04, 21/18*

U.S. Cl. 58—23 A **1 Claim**



1. A crystal electronic timepiece comprising a crystal oscillator; a multistage frequency divider electrically connected to said crystal oscillator, each stage of said multistage frequency divider having a multivibrator circuit with two transistors of different types of conductivity in the first and second arms thereof; transistors operating as a switch, each of said transistors operating as a switch being connected to the input of each said stage respectively in a common-emitter circuit, the collector of each said transistor operating as the switch being connected to the base of the transistor of the same type of conductivity switched into the first arm of said multivibrator circuit which has said transistor operating as the switch connected thereto; a first group of resistors each switched into each said multivibrator circuit respectively so that each said resistor of said first group is connected at one end to the base of said transistor switched into the first arm of said multivibrator, as well as to the collector of said transistor operating as the switch connected to the input of said multivibrator circuit, the other end of each said resistor being connected to the collector of said transistor switched into the second arm of the same said multivibrator circuit; timing RC-circuits corresponding in number to said stages, each RC-circuit being switched into the base circuit of each said transistor switched into the second arm of each said multivibrator; a supplementary group of resistors; coincidence circuits each of which having one transistor, at least one of said coincidence circuits being connected to the output of each said stage respectively in a common-emitter circuit, the collector of said transistor of each said coincidence circuit being connected to that of said transistor of a preceding said coincidence circuit via a resistor of said supplementary group of resistors if said preceding coincidence circuit is even, or directly if said preceding coincidence circuit is odd; a second group of resistors one of which is connected at one end to the base of said transistor of said coincidence circuit and, at the other end, to the collector of said transistor switched into the second arm of said multivibrator circuit, similar connections including all said resistors of said second group and corresponding in number to said stages; a third group of resistors one of which is connected at one end to the collector of said transistor of said coincidence circuit and, at the other end, to the base of said transistor operating as the switch connected to the input of the stage following said coincidence circuit, similar connections including all said resistors of said third group and corresponding in number to said stages; a resistor of said supplementary group connected at one end to the collector of said transistor of said coincidence circuit connected to the output of said first stage and, at the other end, to the input of said first stage; a pulse shaper connected to the output of said coincidence circuit of said last stage of said multistage frequency divider; and an actuating device comprising a current time indicating device connected to the output of and controlled by said pulse shaper.

3,842,587

ELECTRICALLY CONTROLLED PHOTOGRAPHIC CAMERA

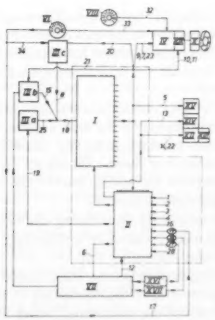
Karl-Peter Strauss, and Wilhelm Koller, both of Braunschweig, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Continuation-in-part of Ser. No. 386,379, Aug. 7, 1973. This application Feb. 13, 1974, Ser. No. 442,261

Claims priority, application Germany, Aug. 19, 1972, 2240920; Nov. 13, 1973, 2356523; Nov. 13, 1973, 2356530

Int. Cl. G03b *7/00*

U.S. Cl. 354—30 **61 Claims**



1. A photographic camera with electronic control means, comprising a central electronic process controller having:

a. a step-by-step switch having a series of different step positions and a series of output connections corresponding to the respective step positions;

b. means for providing an electric signal to an output connection corresponding to a given step position different from an electric signal then provided to output connections corresponding to other step positions;

c. a control and program part;

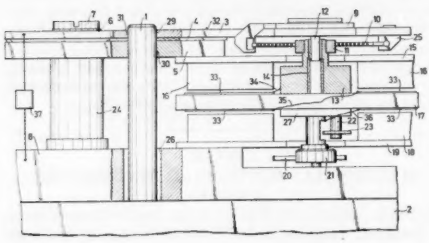
d. a plurality of individual camera elements including a shutter movable between closed and open positions, a diaphragm movable to various aperture positions, and operating means for said shutter and said diaphragm;

e. means for introducing instantaneous values indicating operating conditions of various individual camera elements into said control and program part;
f. feed-back means for feeding values from said control and program part into said step-by-step switch; and
g. means for feeding electric signals from the respective output connections of said step-by-step switch to said individual camera elements.

3,842,588
ELECTRIC TIMEPIECE

Heinz Meitinger, Theodor-Heuss-Str. 16, D-7075 Mutlangen, Germany

Filed Nov. 9, 1972, Ser. No. 305,072
Claims priority, application Germany, Nov. 30, 1971, 2159190
Int. Cl. G04b *29/00*
U.S. Cl. 58—28 B **8 Claims**

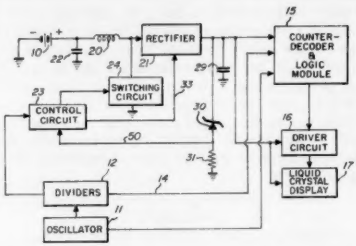


1. In an electric timepiece,
a rotatably oscillatable balance wheel movable about an axis and having a coil thereon,
magnet means located adjacent the balance wheel and adjacent the coil,
means mounting said magnet means and including a frame plate,
a rotatably oscillatable balance staff having first and second ends and having the same axis as said balance wheel and mounting the balance wheel for oscillation therewith, the first end of the balance staff being rotatably carried by the frame plate,
an electric driving circuit to control the current to said coils and being connected to the frame plate,
a hairspring hub encompassing the balance staff, and conductive connecting means insulated from the balance staff securing the hairspring hub to the balance staff for rotable oscillation therewith,
conductors respectively connecting the coil to the balance staff and to said conductive connecting means for connection to said hairspring hub,
a first hairspring encompassing the balance staff and means connecting one end of the hairspring to the balance staff, the other end of the hairspring being connected to the frame plate to thereby provide electrical continuity from the driving circuit and frame plate, to the balance staff, coil and hub,
a rigid bearing bridge confronting the frame plate in fixed relation therewith and rotatably carrying the second end of the balance staff, the bearing bridge also being connected to said driving circuit,
means mounting the bearing bridge in fixed relation to the frame plate and in electrically insulating relation thereto, a second hairspring encompassing the balance staff and having one end connected to the hairspring hub,
and means securing the other end of the second hairspring to the bearing bridge for completing electrical continuity from the hub and spring to the bearing bridge and driving circuit for supplying current to the coil.

3,842,589
ELECTRONIC TIMEPIECES

Nunzio A. Luce, Trenton, and George A. Graham, Mercerville Township, Mercer County, both of N.J., assignors to Optel Corporation, Township of South Brunswick, N.J.

Filed June 6, 1973, Ser. No. 362,176
Int. Cl. G04d *19/30*; **G04c** *3/00*
U.S. Cl. 58—50 R **10 Claims**



1. In an electronic timepiece of the type employing a relatively stable oscillator and associated frequency dividers for providing at outputs thereof respective signals of frequency rates necessary for time keeping operations, said timepiece including a low voltage supply and a liquid crystal display adapted for efficient operation at a given bias level in excess of said low voltage supply, the combination therewith of apparatus for converting said low voltage supply to said given bias level, comprising:
a. an inductor having a relatively high quality factor, said inductor having a first terminal coupled to a terminal of said low voltage supply and a second output terminal,
b. switching means, having an output electrode, a common electrode and a control electrode, said switching means capable of being in a first state indicative of a low impedance between said output and common electrodes, and in second state indicative of a high impedance between output and common electrodes, said states selected according to the magnitude of a control signal applied to said control electrode, said output electrode of said switching means coupled to said second output terminal of said inductor,
c. control means having an input responsive to one of said signals at one of said frequency rates provided by said dividers and an output coupled to said control electrode of said switching means for selectively causing said inductor to conduct current via said low voltage supply through said switch in said first state, and
d. utilization means coupled to said second output terminal of said inductor and responsive to said second state to develop any energy previously stored in said inductor during said first state into said given bias level necessary to operate said liquid crystal efficiently.

3,842,590
CALENDAR TIMEPIECE

Toshitake Kato, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed June 28, 1973, Ser. No. 374,314
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **3 Claims**

1. A calendar timepiece comprising:
a casing having a dial thereon;
said dial having hour indicia regularly spaced about the periphery thereof, a first window, a second window, and weekday indicators fixed on said dial adjacent said second window designating in order Sunday through Saturday;
a month disc viewable through the first window having indicia thereon designating the months of the year;

a calendar disc having indicia thereon designating the dates of a month, said calendar disc indicia being located such that when the first date is positioned adjacent the corresponding weekday indicator, a complete monthly calendar is viewable through said second window with each date aligned with the proper corresponding weekday indicator;

setting means mounted on said casing for manually setting said month disc and said calendar disc;

a timepiece movement;

hour, minute, and second hands driven by said timepiece movement overlying said dial;

and a day disc driven by said timepiece movement having means coacting with said date indicia for indicating automatically the day of the month.

3,842,591

CHRONOGRAPH TIMEPIECE

Gerald Dubois, and Francois Berthoud, both of Le Lieu, Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed Mar. 8, 1973, Ser. No. 339,299

Claims priority, application Switzerland, Mar. 15, 1972, 760/72

Int. Cl. G04f 7/04

U.S. Cl. 58—77 **14 Claims**

1. A chronograph timepiece comprising, a timepiece movement including a frame and a gear train, a chronograph mechanism mounted at a first driven end thereof in derivation on the gear train for driving the chronograph mechanism, a chronograph coupling device and a locking device positioned on the chronograph mechanism at said driven end, the chronograph coupling device and the locking device comprise a common control element, the coupling and locking devices being arranged such that the control element is operable between a first working position in which a driven element is coupled and released and a second working position in which the driven element is disconnected and locked, and a braking device positioned on the chronograph mechanism at the terminal end thereof opposite said driven end thereof, whereby upon disconnection of the movement from the mechanism the gear train of the mechanism is held at both ends by said locking and braking devices to prevent any slippage of gears in the gear train.

3,842,592

ARRANGEMENT FOR SECURING THE HAIRSPRING STUD ON A WATCH FRAME PART

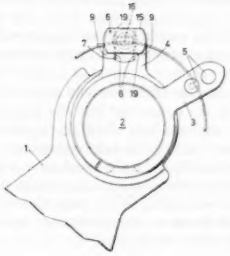
Urs Giger, Solothurn, Switzerland, assignor to Eta A.G. Ebauches-Fabrik, Grenchen, Switzerland

Filed Jan. 8, 1974, Ser. No. 431,778

Claims priority, application Switzerland, Jan. 12, 1973, 452/73

Int. Cl. G04b 17/32

U.S. Cl. 58—115 **5 Claims**

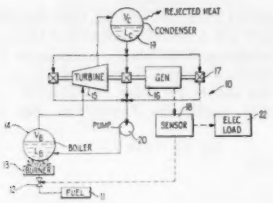


1. In a watch set composed of a frame part and a hairspring stud being adjustably carried by and having an axis perpendicular to said frame part, the provision of an arrangement for securing the hairspring stud in adjusted position on said frame part, said arrangement comprising, in combination, a pair of resilient arms on said frame part and an annular groove in said stud being provided therearound, said groove having a plane side face perpendicular to the stud axis of a frusto-conical side face extending inwardly toward said plane side face, said frame part having overall substantially the same thickness and being integrally made with said arms out of a good springy material, each one of said arms having two plane side faces perpendicular to the stud axis, the plane side faces of said arms being coplanar in pairs, a guiding slot being defined by said arms sand extending therebetween substantially in a radial direction with respect to the hairspring, said slot having parallel side faces on said arms, rectilinear edges being formed between each one of said side faces of the guiding slot and the plane side faces of the corresponding arm, said stud being inserted in and adjustable along and within said guiding slot thereby bending said arms by urging them slightly away from one another in a direction substantially perpendicular to the stud axis, said arms thus exerting a clamping action on said stud and securing it in that way in adjusted position, said clamping action occurring through the rectilinear edges of said arms lying in a first pair of coplanar side faces thereof and the second pair of coplanar side faces, the rectilinear edges lying in said first pair of coplanar side faces engaging said frusto-conical side face of the stud groove thereby exerting forces on said stud having components along the stud axis thus causing said plane side face of the stud groove to be pressed on said second pair of coplanar side faces of said arms.

3,842,593
CLOSED RANKINE CYCLE POWER PLANT

Lucien Y. Bronicki, and Amnon Yogev, both of Rehovoth, Israel, assignors to Ormat Turbines (1965) Ltd., Yavne, Israel

Filed Aug. 29, 1973, Ser. No. 391,163
Claims priority, application Israel, Sept. 5, 1972, 40299
Int. Cl. F01k *25/00*
U.S. Cl. 60—36 **3 Claims**

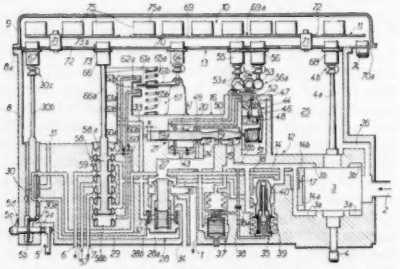


1. A closed Rankine cycle power plant of the type comprising a boiler for vaporizing a high molecular weight working fluid, a turbine for expanding the vapor and driving a load such as an electrical generator, a condenser for converting the turbine exhaust vapors to a liquid at a lower temperature and pressure than that in the boiler, and means for feeding condensed liquid in the condenser into the boiler at a high pressure wherein the working fluid is a mixture of ortho-dichlorobenzene and meta-dichlorobenzene such that the composition of the liquid in the condenser is in the range 2:3 to 3:2 of ortho-dichlorobenzene and meta-dichlorobenzene when the power plant is in steady state operation at which the composition of liquid in the condenser is the same as the composition of vapor in the boiler.

3,842,594
GOVERNORS FOR GAS TURBINES

Wilhelm Grunert, Dammarie-Les-Lys, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Apr. 18, 1973, Ser. No. 352,288
Claims priority, application France, Apr. 19, 1972, 72.13746
Int. Cl. F02c *9/08, 9/10*
U.S. Cl. 60—39.28 R **7 Claims**

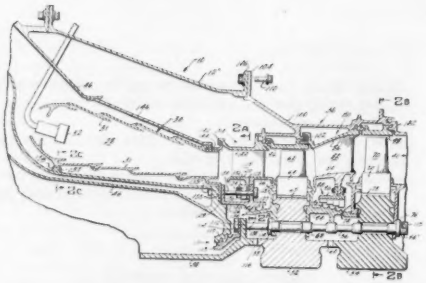


1. A governor for controlling the fuel feed of a gas turbine and in particular an aviation turbojet engine, comprising a housing having a removable cover and containing a fuel bath; hydromechanical elements contained in the housing and immersed in said fuel bath, said hydromechanical elements having fuel return and leakage orifices opening into the said housing; a pumping device for feeding said hydromechanical elements with fuel; a return conduit for fuel leaving said housing; a support arranged in the housing and defining a space contained in the cover, said support having an upper part and a lower part; electromechanical elements contained in the housing and supported by the lower part of said support in such manner as to be immersed in the fuel bath; mechanical connections connecting said hydromechanical elements to said electromechanical elements; electronic elements supported by the upper part of said support in the said space in such manner as to be immersed in the fuel bath; and electrical connections connecting the electromechanical elements to the electronic elements.

3,842,595
MODULAR GAS TURBINE ENGINE

James Smith, Topsfield, and John Kenneth Baxter, Jr., Marblehead, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Dec. 26, 1972, Ser. No. 318,179
Int. Cl. F02c *3/06, 7/06, 7/20*
U.S. Cl. 60—39.36 **8 Claims**



1. A modular gas turbine engine comprises:

a cold module which includes a casing open at one end to provide an inlet and extending rearwardly to form a combustor outer casing, a frame disposed within the cold module, a shaft journaled for rotation within the frame by bearings located entirely within the cold module, and a compressor which receives and pressurizes an inlet airflow;

a combustion liner assembly for receiving the pressurized airflow from the compressor, together with an inlet flow of fuel within the high pressure air and fuel mixture is ignited to produce a high energy gas stream;

a nozzle diaphragm assembly for receiving and directing the high energy gas stream from the combustion chamber wherein the nozzle diaphragm includes a plurality of arcuate segments assembled on a circumferential support ring to form a flow annulus which may be attached to the engine frame by a first plurality of circumferentially spaced apart bolts which pass through and engage the support ring; and

a turbine module which receives the high energy gas stream from the nozzle diaphragm assembly and is drivably connected to the compressor through the shaft wherein the turbine module includes at least one rotor disc which is maintained in axially spaced engaged relation to the aft end of the shaft by a second plurality of circumferentially spaced apart bolts which pass through the entire turbine module thus facilitating ready access to the second plurality of bolts from the aft end thereof in order to permit intact removal and replacement of the turbine module from the aft end of the engine without removing a bearing or any portion thereof and wherein torque is transmitted from the turbine module to the shaft through an interconnecting toothed coupling.

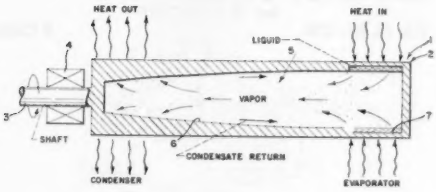
and wherein the turbine module includes a forward and an aft rotor disc maintained in axially spaced abutting relation by a third plurality of circumferentially spaced apart elongated bolts extending therethrough in interspaced relation to the second plurality of bolts with torque transfer between the forward and aft rotor discs accomplished through an interconnecting tooth coupling.

3,842,596

METHODS AND APPARATUS FOR HEAT TRANSFER IN ROTATING BODIES

Vernon H. Gray, 28517 W. Oakland, Bay Village, Ohio 44140

Filed July 10, 1970, Ser. No. 53,898
Int. Cl. F02c 7/12
U.S. Cl. 60—39.66 **6 Claims**



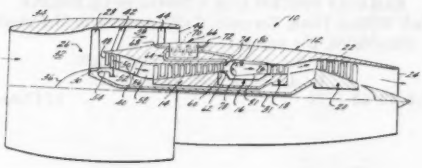
1. A combustion turbine engine comprising a housing;
an elongated body mounted for rotation about its longitudinal axis in said housing, said body being provided with an interior sealed elongated cavity coaxial with said longitudinal axis of said body, said cavity having a first portion locating at one end of said body, and said cavity having a second portion locating at the opposed end of said body, said second portion having generally conical walls with its larger diameter adjacent said first portion, said first portion having a diameter not less than the larger diameter of said second portion, every point on the conical walls defining said second cavity portion having a slope and radial distance from the axis which, when the body rotates at operational velocities, produces a centrifugal pumping acceleration in excess of 1G in a thin film of liquid located at such point;
a liquid inventory sealed in said cavity, said inventory being sufficiently large to form a substantially uniform annulus in said elongated body when said body rotates at said operational velocities, said liquid inventory being sufficiently small to be contained substantially within said first cavity when said annulus is formed;
a plurality of hollow vanes projecting radially from said body radially outwardly of said first cavity portion;
means for producing hot combustion gases to blow past said vanes in said housing and drive said body in rotation at operational levels of angular velocity; and ducts communicating between the hollow in each of said vanes and said first cavity portion, a portion of said liquid inventory in said body cavity flowing outwardly into said hollow vanes via said ducts when said liquid annulus is formed, whereby said vanes are cooled by such liquid; and
a jacket surrounding the body exterior radially outwardly of said second cavity portion, said jacket provided with a fuel inlet leading from a source of fluid fuel, said jacket further provided with a fuel outlet leading to said hot combustion gas producing means, so that fuel from said fuel source may flow through said jacket across the adjacent exterior surface of said body to absorb heat therefrom prior to entering said combustion gas producing means.

3,842,597

GAS TURBINE ENGINE WITH MEANS FOR REDUCING THE FORMATION AND EMISSION OF NITROGEN OXIDES

Frederic Franklin Ehrich, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Mar. 16, 1973, Ser. No. 342,041
Int. Cl. F02c 7/18, 7/22
U.S. Cl. 60—226 R **5 Claims**



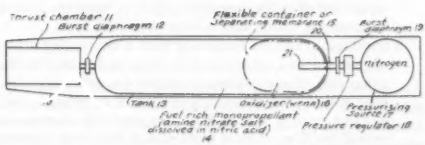
1. In a gas turbine engine having a compressor, combustor and turbine in serial flow relation, means for reducing the formation of oxides of nitrogen within the combustor comprise:
means within said combustor defining a primary combustion zone, a secondary combustion zone, and a dilution zone;
means for bleeding a portion of the airflow pressurized by the compressor;
means for cooling the airflow bled from the compressor;
means for directing the unbled portion of compressor discharge airflow to the primary combustion, secondary combustion, and dilution zones of the combustor in order to support combustion in the primary combustion zone; and means for introducing the cooled compressor bleed airflow into the primary combustion zone of the combustion in order to reduce the flame temperature.

3,842,598

ROCKET POWER PLANT

Irving Forsten, West Orange, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1966, Ser. No. 594,313
Int. Cl. F02k 9/02
U.S. Cl. 60—259 **3 Claims**



1. A rocket assembly having a prepackaged power plant encompassed therein comprising: pressure activating means comprising a gas, connecting means extending laterally thereof to a flexible container constructed of a self-sealing material and having an oxidizer positioned therein, a pressure regulation and burst diaphragm positioned on said means between the pressure activating means and the flexible container, said flexible container positioned within the fuel tank means, said fuel tank means having a monopropellant positioned therein, additional connecting means extending laterally from said tank to a thrust chamber, a second burst diaphragm positioned on said additional connection means be-

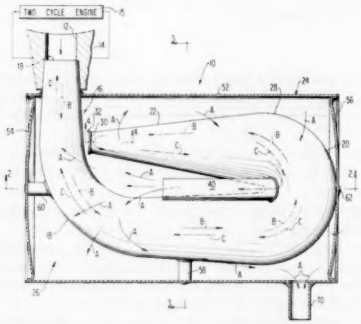
tween the tank and thrust chamber, whereupon activation of the prepackaged power plant, gas passes through the pressure regulator and burst diaphragm into the flexible container, whereby the increased pressure therein burst said container and mixes the oxidizer by gravitation with the monopropellant, whereby the resultant increased pressure in the fuel tank opens the second burst diaphragm and the propellant is thereafter fed to the thrust chamber for propulsion of the rocket.

3,842,599

EXHAUST SYSTEM FOR A TWO-CYCLE ENGINE

Jack William Ehlen, Torrance, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Dec. 18, 1972, Ser. No. 315,850
Int. Cl. F01n *1/08;* **F02b** *27/04*
U.S. Cl. 60—273 **12 Claims**



1. An exhaust system for a two-cycle engine having at least one working chamber with an exhaust port fashioned into said working chamber comprising:

a tubular member connected at one end in fluid communication with said exhaust port, and said tubular member including,

an expansion section fashioned with an increasing cross-sectional area from said one end of said tubular member for reducing pressure at said exhaust port of said at least one working chamber during an initial scavenging phase to aid in scavenging combusted fluid from said at least one working chamber,

a generally U-shaped section fashioned with a constant cross-sectional area and connected at one end to the other end of said expansion section to bend the flow of exhaust gas within said tubular member, and

a contraction section fashioned with a decreasing cross-sectional area connected at the large end thereof to the other end of said U-shaped section for reflecting pressure waves back through said tubular member to said exhaust port in said at least one working chamber to retard the flow of fluid from said at least one working chamber just prior to the closing of said at least one exhaust port whereby the retention of combustible fluid within the working chamber of said two-cycle engine may be optimized during a final scavenging phase to increase power output of said two-cycle engine;

closure means sealing the other end of said contraction section to assist said contraction section in reflecting pressure waves back to said at least one exhaust port in said at least one working chamber;

chamber means, encompassing said tubular member and dimensioned such that the interior of said chamber means is spaced from the exterior of said tubular member;

means for supportingly connecting said tubular member within the interior of said chamber means;

port means fashioned through a wall of said tubular member for providing fluid communication between the interior of said tubular member and the interior of said chamber means; and

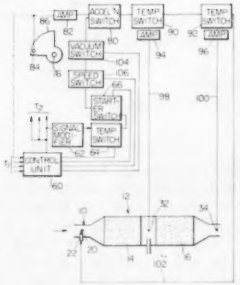
an exhaust conduit connected into said chamber means for permitting exhaust gas to escape from said chamber means.

3,842,600

EXHAUST CLEANING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Yasuo Nakajima; Shin-Ichi Nagumo; Toru Yoshimura, and Saburo Usui, all of Yokosuka, Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Mar. 21, 1973, Ser. No. 343,261
Claims priority, application Japan, Mar. 22, 1972, 47-28843; Mar. 22, 1972, 47-28844
Int. Cl. F02b *75/10*
U.S. Cl. 60—276 **9 Claims**

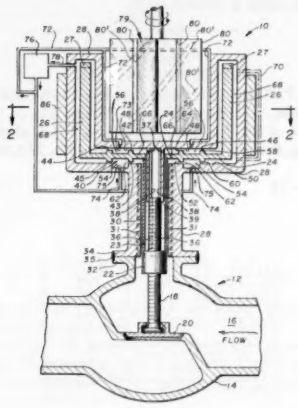


1. An exhaust cleaning apparatus for an internal combustion engine comprising reducing catalyst means disposed in an exhaust system of the engine for reducing nitrogen oxide in exhaust gases passed to the exhaust system from the engine, oxidizing catalyst means disposed in the exhaust system and located downstream of said reducing catalyst for oxidizing carbon monoxide and unburned hydrocarbons in the exhaust gases passed from said reducing catalyst means, additional fuel supplying means for admixing additional hydrocarbons to the exhaust gases entering said reducing catalyst means, and control means for controlling said additional fuel supplying means for interrupting the supply of the additional hydrocarbons to the exhaust gases in response to engine operating conditions producing enrichment of an air-fuel mixture to be supplied to the engine, in which said control means comprises a sensor which is responsive to the concentration of oxygen in the exhaust gases entering said reducing catalyst means for producing an electrical signal in response to a concentration of the oxygen lower than a predetermined level and a switching arrangement comprising first, second and third switch means electrically connected in series to said additional fuel supplying means for controlling the fuel supplying means to interrupt the supply of said additional hydrocarbons to the exhaust gases when at least one of said first to third switch means is open, said first switch means being operative to close in response to said electrical signal from said sensor, said second switch means being responsive to the load on the engine and operative to open in response to an engine load smaller than a first predetermined value larger than said first predetermined value, said third switch means being responsive to a starting condition of the engine and operative to open when the engine is being started.

3,842,601
LARGE LIQUID METAL VALVE ACTUATOR

Stephen Lyle Borst, Windsor Locks, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Mar. 8, 1973, Ser. No. 339,266
Int. Cl. F15b *15/18, 21/06*
U.S. Cl. 60—326 6 Claims



1. An actuator assembly driven by an electrically conducting liquid, comprising:

a. a housing having the shape of a hollow cup, thereby forming an interior void shaped like a cup and an exterior cylindrical cupped space;

b. a vane assembly adapted to rotate within said interior cup shaped void with the vanes of said vane assembly adapted to rotate through the space in the hollow walls of said hollow cup shaped housing;

c. means suspending said vane assembly within said cup shaped void for allowing low friction rotation of said vane assembly;

d. power delivery means operably coupled to said vane assembly for utilizing said rotation;

e. a passage in said housing adapted to permit utilization of said rotation;

f. a passage in said housing adapted to permit the filling of said housing with said electrically conducting liquid so that said void is filled with said liquid; and

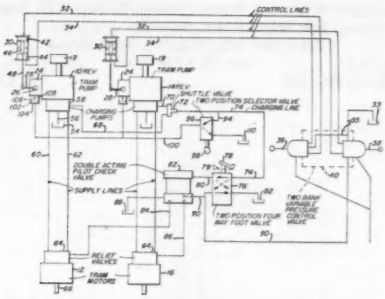
g. a cylindrical rotor with a plurality of magnetic poles positioned on the cylindrical surface adapted to be inserted into and rotated in either direction with the cylindrical cupped shape formed by said cup shaped housing.

3,842,602
MINER TRAM CONTROL CIRCUIT

Donald D. Ziegler, Van, Pa. 16363, and Glenn A. Daily, R.D. No. 1, Utica, Pa. 16362

Continuation of Ser. No. 181,087, Sept. 16, 1971, abandoned. This application July 9, 1973, Ser. No. 377,342
Int. Cl. F15b *18/00*
U.S. Cl. 60—327 5 Claims

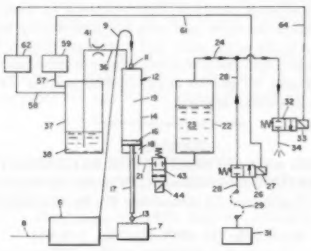
1. A method of controlling the tramming rate of a mining machine having a constant speed hydraulic pump means and at least one hydraulic driving motor for tramming comprising the steps of: directing at least a major portion of the output of pressurized hydraulic fluid from said pump means to said driving motor for hydraulic energization thereof; directing a first control portion of such pressurized hydraulic fluid from said pump means to a first control valve means; selectively moving said first control valve means to vary the quantity of output of pressurized hydraulic fluid from said pump means; directing a second control portion of such pressurized fluid from said pump means to a second control valve means; selectively moving said second control valve means to limit the maximum quantity of output of pressurized hydraulic fluid from said pump means.



3,842,603
CRANE LOAD COMPENSATOR

Edward C. Ditzen, Lafayette, Calif., assignor to The Rucker Company

Filed Nov. 30, 1973, Ser. No. 420,691
Int. Cl. F15b *1/02*
U.S. Cl. 60—416 7 Claims

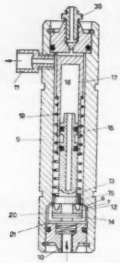


1. A crane load compensator for interconnection between a crane and a load comprising an expansible volume mechanism including a cylinder and a double acting piston thereon defining a primary chamber and a secondary chamber, means for connecting said expansible volume mechanism to said crane and to said load, a first accumulator adapted to contain liquid in the lower portion thereof and air in the upper portion thereof, a second accumulator adapted to contain liquid in the lower portion thereof and air in the upper portion thereof, a first conduit for connecting the lower portion of said first accumulator to said primary chamber, a second conduit for connecting the lower portion of said second accumulator to said secondary chamber, means for supplying air to and releasing air from said first accumulator, means for sensing a predetermined low pressure in the upper portion of said second accumulator, means for sensing a predetermined high pressure in the upper portion of said second accumulator, and means responsive to said sensing means for controlling said air supplying and air releasing means.

3,842,604
BOOSTER UNIT FOR VEHICLE HYDRAULIC BRAKE SYSTEMS

Norman Henry Hackett, Bondi, New South Wales, Australia, assignor to Norman Hackett Patents Holdings PTY. Limited, Sydney, New South Wales, Australia

Filed Apr. 10, 1972, Ser. No. 242,366
Int. Cl. F15b 7/00
U.S. Cl. 60—563 12 Claims

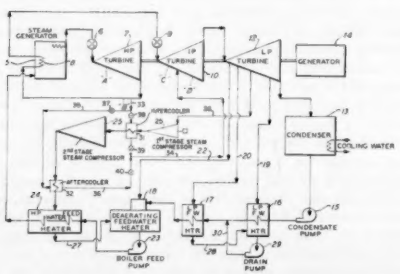


1. A booster unit for a brake system of the type described; comprising: an operating cylinder having an inner end portion adapted for pipe connection to the master cylinder of the system and an outer end portion adapted for pipe connection to the brake applying means of the system, a first piston in said operating cylinder disposed between said end portions, a piston rod which at one end carries said first piston and at its other end is formed as a second piston, a second cylinder inside said operating cylinder, said second piston extending into said second cylinder and engaging the circumferential inner wall thereof to form a closed air chamber, and a by-pass valve so associated with said first piston as to permit fluid communication between said end portions during an initial portion of a brake application and to prevent fluid communication between said end portions during the remainder of that application and to permit such communication when the brakes are not being applied.

3,842,605
METHOD AND APPARATUS FOR REGENERATIVE HEATING IN THERMAL POWER PLANTS

Edward K. Tegtmeyer, 33 Grandview Pl., North Caldwell, N.J. 07006

Filed Feb. 25, 1971, Ser. No. 118,621
Int. Cl. F01k 7/38
U.S. Cl. 60—678 10 Claims



1. The method of operating a vapor-liquid cycle power plant for the production of energy output at high efficiency comprising a turbine cycle of low and high pressure and a vapor generator comprising:

extracting vapor from a relatively low pressure source of the vapor-liquid cycle,

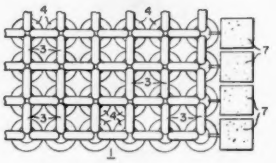
compressing such extracted vapor to produce a high pressure and a high temperature vapor,

and supplying such high pressure and high temperature vapor to the vapor-liquid cycle power plant by returning it to the vapor generator.

3,842,606
BEACH-PROTECTORS

Wade Stiles, P.O. Box 151, Palm City, Fla. 33490, and George V. R. Dunan, 4170 Raynolds Ave., Miami, Fla. 33133

Continuation of Ser. No. 788,495, Feb. 4, 1969, abandoned. This application Mar. 16, 1972, Ser. No. 235,446
Int. Cl. E02b 3/12
U.S. Cl. 61—38 9 Claims



1. A beach-protector, comprising a plurality of used pneumatic type automobile tires arranged in horizontal and vertical rows, those tires in the vertical rows having contact with the beach to be protected, those tires in the horizontal rows being slightly elevated above the beach; all of said tires being interlocked with each other to form a mat with spaces between the rows, and means for anchoring the mat to the beach.

3,842,607
ARCTIC ISLANDS

Ray M. Kelseaux, and Jerry W. Biles, both of Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed July 13, 1973, Ser. No. 379,139
Int. Cl. E02d 21/00
U.S. Cl. 61—46 38 Claims

1. In a process for building an artificial permafrost island in Arctic sea waters wherein sand and gravel are dredged from the floor of the sea and are redeposited on the sea floor at a location where an island is desired and until the height of the sand and gravel extends above the surface of the water, the method of consolidating silt with the sand and gravel of the island being built which comprises mixing a slurry thickener with a slurry of silt in sea water, and depositing the resulting thickener-slurry mixture on the island being built.

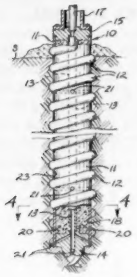
3,842,608
METHOD AND MEANS FOR INSTALLING LOAD BEARING PILES IN SITU

Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio 44313

Filed Nov. 28, 1972, Ser. No. 310,049
Int. Cl. E02d 5/36, 7/24
U.S. Cl. 61—53.52 4 Claims

1. A method of installing a reinforced cast-in-place, load-bearing pile in an earth situs, comprising: the steps of drilling into the earth of the situs with an elongated, rigid core having exterior screw means thereon, while supplying a pressurized fluid medium through passage means in the core to mix with the drilled earth, to facilitate upward discharge of earth along

said screw means, until a pile cavity of requisite depth and girth is formed; further rotating said pile core in place within the formed cavity while pumping fluid, self-hardenable, cementitious material through said passage means to force cementitious material along said screw means, thereby to enlarge the girth of the pile cavity, and form a generally tubular body about the rigid core; and allowing said formed generally tubular body to set and harden in the cavity with said rigid pile core anchored therein, as a composite, formed-in-place, pile body of correspondingly increased load-bearing capacity.



3,842,609

PILING METHODS

Gordon Henry Gilberd, Auckland, New Zealand, assignor to Gilberd Hadfield Pile Company, Limited, Mt. Roskill, Auckland, New Zealand

Filed Oct. 15, 1973, Ser. No. 406,359

Claims priority, application New Zealand, Oct. 20, 1972, 168757

Int. Cl. E02d *5/44*

U.S. Cl. 61—53.6 **4 Claims**

1. A method of casting a pile in situ comprising the steps of casting a concrete plug in an end of a former and while the plug is in a semi-hardened state, driving the former with the plug lowermost into a site by the use of a driving monkey acting on the plug, providing a counterweight on the plug, mounting a vibrator extractor on the former, and operating the extractor at a frequency that will free any bond between the former and plug and then withdrawing the former partway up the plug, removing the counterweight, inserting reinforcing cementious mixture into the former to form a pile and using a vibrator extractor to extract the former at a rate commensurate to the hardening rate of the cementious mixture.

3,842,610

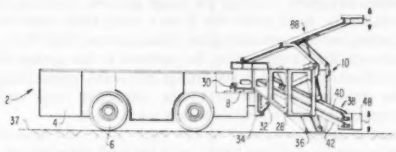
MINE ROOF DRILLING, BOLTING AND PLATING MACHINE

Earl C. Willis, Harrisburgh, and Ramon A. Gothard, Mascoutah, both of Ill., assignors to Peabody Coal Company, St. Louis, Mo.

Filed Dec. 21, 1972, Ser. No. 317,116

Int. Cl. E21c *11/02*; E21d *20/00, 21/00*

U.S. Cl. 61—63 **14 Claims**



1. In a machine for installing a plate on a mine roof,

a chassis having means supporting the same for movement along the ground,

a first boom,

means mounting one end of said first boom on said chassis for raising and lowering movement of the other end thereof relative to the chassis,

means for raising and lowering said other end of said first boom,

a plate support comprising a platform member having an aperture therethrough for permitting an anchor bolt to pass generally vertically therethrough,

means mounting said platform on said other end of said first boom,

a second boom,

means mounting one end of the second boom on said chassis below the mounting of the first boom thereon for raising and lowering of the other end of the second boom relative to the chassis and the first boom,

means for raising and lowering said other end of the second boom independently of the raising and lowering of the first boom,

and a drill chuck on the other end of the second boom, said drill chuck being disposed below and in vertical alignment with the aperture in the plate support.

3,842,611

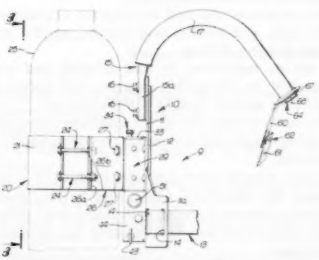
DIVER'S PACK

Robert L. Anderson, 2522 E. Pearson Ave., Fullerton, Calif. 92631

Filed June 28, 1973, Ser. No. 374,473

Int. Cl. B63c *11/02*

U.S. Cl. 61—70 **4 Claims**



1. In a diver's pack, the combination comprising:

a. an upright frame including a back plate, and a pair of diver's shoulder hooks each having removable attach-

ment to the plate, the hooks being substantially rigid to hook over and support the pack on a vessel rail,

b. holder means on the frame to support air tank structure,

c. structure on the frame to releasably retain auxiliary weight means for selective release thereof by the diver, said structure including a chamber for reception of ballast particles, the chamber having a bottom closure and there being a manually operable release connected with the closure to open the closure enabling free dropping of the ballast particles from the chamber, the closure located below the level of hook attachment to the frame, and

d. straps extending between the frame and end terminals of said hooks, to fit under the diver's arms, each strap including two sections and quick release connections therebetween for disconnecting the sections at the option of the diver, there also being fittings removably connecting the strap sections closest to the respective hook end terminals to said terminals which are tubular,

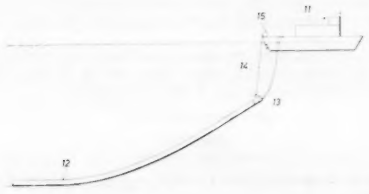
e. said chamber attached to the back plate and spaced below the level of said hooks, with the back plate extending at one side of the chamber, there being a rigid enclosure directly above the chamber and attached to the back plate, said holder means attached to the back plate via said enclosure at the side thereof opposite the back plate, the enclosure having an openable top closure accessible adjacent the rear side of the plate, there being a wall between and separating the interiors of the chamber and enclosure.

3,842,612

PIPELINE RECOVERY TOOL AND METHOD

James Flinnoy Arnold, Houston, Tex., assignor to Hydrotech International Inc., Houston, Tex.

Filed Sept. 20, 1972, Ser. No. 290,455
Int. Cl. F16l *1/00, 35/00*
U.S. Cl. 61—72.1 **11 Claims**



1. In apparatus for releasably closing the end of a pipe, the combination comprising:

a releasable housing arranged for co-axial telescopic mounting with the end of said pipe;

means supported by said housing for releasably engaging said pipe and holding said housing against axial movement relative thereto;

seal means supported by said housing and cooperative therewith for releasably engaging and sealing the end of said pipe against fluid flow therethrough;

hydraulic actuating means for effecting movement of said holding means and seal means to said respective engaging position;

hydraulic release means operably connected to said holding means for positively urging said holding means to the release position therefor, with consequent release of said seal means, whereby said housing can be removed from said pipe;

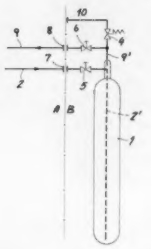
and means for applying pressurized hydraulic fluid to said hydraulic activating means and said hydraulic release means for engaging and subsequently disengaging said housing with said pipe.

3,842,613

SYSTEM FOR THE DISCHARGING OF A TRANSPORT RECEPTACLE FOR LIQUEFIED GAS

Rudolf Becker, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Oct. 24, 1972, Ser. No. 300,271
Claims priority, application Germany, Oct. 22, 1971, 2152774
Int. Cl. F17c *7/02*
U.S. Cl. 62—50 **2 Claims**



1. A system for the transport of liquefied gas, comprising a pressurizable receptacle for the liquefied gas; a first pressure-relief valve connected to said receptacle and displaceable therewith between a filling location and a discharge station for relieving the buildup of pressure within said receptacle above a predetermined transport pressure; means for generating a discharge pressure greater than said transport pressure in said receptacle at said discharge station; means communicating with said receptacle for leading liquefied gas therefrom upon development of the discharge pressure; and a second pressure-relief valve located at said discharge station and releasably connectable in line and in series with said first pressure-relief valve for venting said receptacle upon the development of a pressure therein exceeding to a predetermined degree said discharge pressure, said second pressure-relief valve being so constructed and arranged as to vent said receptacle upon the pressure therein exceeding to a predetermined degree the sum of said discharge pressure and said transport pressure, said receptacle being a tank mounted in a seagoing vessel and said liquefied gas being liquid methane, said tank having a siphon tube reaching to the bottom thereof and terminating, externally of said tank, in a first shutoff valve and a first connector, said means for generating said discharge pressure in said receptacle including a vent line communicating with said tank at an upper portion thereof, a second shutoff valve connected to said line and a second connector in line with said second shutoff valve, said first pressure-relief valve communicating with said vent line and being formed with a third connector matingly engageable with a corresponding connector at said discharge station in line with said pressure-relief valve, said discharge station being provided with a gas-pressure line releasably connectable through said second connector with said tank and a liquefied-gas withdrawal line releasably coupled with said first connector.

3,842,614

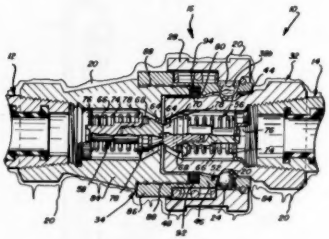
CRYOGENIC COUPLING ASSEMBLY

Thomas D. Karcher, Rocky River, and Harry H. Hammond, Middleburg Heights, both of Ohio, assignors to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Oct. 12, 1973, Ser. No. 405,797
Int. Cl. F25d
U.S. Cl. 62—56 **7 Claims**

1. An apparatus for use in handling fluids at cryogenic temperatures in an environment in which ice forms on the apparatus during the handling of the fluids, said apparatus

comprising first conduit means for conducting fluids at cryogenic temperatures, second conduit means for conducting fluids at cryogenic temperatures, and coupling means for connecting said first and second conduit means in fluid communication, said coupling means being operable manually against the influence of the ice formed thereon from an engaged condition interconnecting said first and second conduit means to a disengaged condition in which said coupling means is ineffective to interconnect said first and second conduit means, said coupling means including a plug element having an axially extending passage for conducting fluid at cryogenic temperatures and socket means for receiving said plug element, said socket means including a socket wall which at least partially defines an axially extending cavity for receiving said plug element, first surface means for defining a first plurality of openings extending through said socket wall into said cavity, said first plurality of openings being disposed in a generally circular array about said socket wall and having central axes extending transversely to the central axis of said cavity, a



plurality of locking elements disposed on said socket wall, each of said locking elements being associated with one of said first plurality of openings and movable between a release position and a retaining position extending through the associated one of said openings into engagement with said plug element to hold said plug element against axial movement relative to said socket means, and second surface means for defining a second plurality of openings extending through said socket wall into said cavity to receive ice formed when said coupling means is in the engaged condition, said second plurality of openings being interspersed with said first plurality of openings and being unrestricted by said locking elements to enable said second openings to receive ice formed during the flow of fluid at cryogenic temperatures through said coupling means and to enable said coupling means to be manually actuated from the engaged condition to the release condition against the influence of the ice.

3,842,615

EVAPORATIVE COOLER

Stanley A. Reigel, Overland Park, Kans., and Charles D. Doyle, Kansas City, Mo., assignors to Standard Havens Inc., Kansas City, Mo.

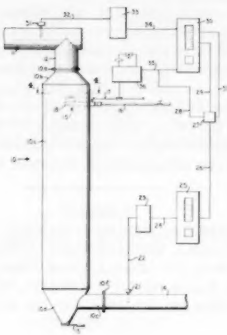
Filed Nov. 6, 1972, Ser. No. 304,076
Int. Cl. F28c *3/06*
U.S. Cl. 62—171 **2 Claims**

1. In an evaporative cooler for cooling hot process gas, a control system for regulating water flow thereto comprising:

first temperature sensing and transmitting means to sense the temperature of the outlet process gas discharged from said evaporative cooler and to generate signals in response to temperature fluctuations of said outlet gas;

a first controller for receiving signals from said first temperature means, comparing said signals with a preselected set point temperature of said outlet gas, and generating signals in proportion to the difference between the set point temperature and the temperature of the outlet gas sensed by said first temperature means;

second temperature sensing and transmitting means to sense the temperature of the inlet process gas delivered to the evaporative cooler and to generate signals in response to the rate of change in temperature fluctuations of said inlet gas; and



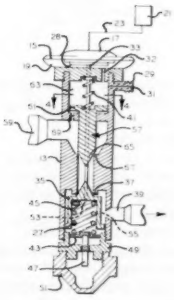
a second controller for receiving signals generated by said first controller and proportionately regulating the water flow to said cooler in response thereto, and for receiving signals from said second temperature means and derivatively regulating the water flow to said cooler in response thereto.

3,842,616

REFRIGERANT EXPANSION DEVICE

G. Bradley Orbesen, Tully, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,368
Int. Cl. F25b *41/04*
U.S. Cl. 62—225 **4 Claims**



1. A refrigerant expansion device for a compression refrigeration system, said device comprising:

a body member;

an inlet for admitting high pressure refrigerant into said body member;

an outlet for discharging expanded low pressure refrigerant from said body member;

means defining a refrigerant flow path between said inlet and said outlet;

expansion means comprising a first valve seat and a valve, said valve being movable relative to said valve seat for cooperating with said valve seat to define a variable size orifice in said refrigerant flow path for expanding refrigerant flowing through said orifice and said valve being

engageable with said valve seat for sealing said orifice, and said valve including refrigerant passage means extending through said valve for equalizing the refrigerant pressure across said valve when said valve is engaged with said valve seat; and

refrigerant flow preventing means including:

a second valve seat;

a check valve, said check valve being movable between a closed position wherein said check valve engages said second valve seat to close said flow path and an open position wherein said check valve disengages said valve seat;

means for moving said check valve to the open position when the refrigeration system is started up; and

means for moving said check valve to the closed positior when the refrigeration system shuts down.

3,842,617

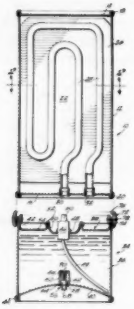
DISPOSABLE REFRIGERATED CONTAINER AND REFILLABLE REFRIGERANT SUPPLY VESSEL

Harold E. Chase, 334 Minorca, Coral Gables, Fla. 33134, and Charles R. Woods, 8895 S.W. 129th St., Miami, Fla. 33156

Filed Jan. 28, 1974, Ser. No. 437,041

Int. Cl. F25d *3/10*

U.S. Cl. 62—294 **6 Claims**



1. A disposable refrigerated container and a refillable refrigerant vessel, the combination comprising;

A. a container including,

1. a cylindrical sidewall,
2. a bottom end closure crimped to the the bottom periphery of said container sidewall,
3. a top end closure crimped to the top periphery of said container sidewall,
4. a heat exchanger fixed therein,
5. an inlet port through said container bottom closure to said heat exchanger, and
6. an exhaust port through said container bottom closure from said heat exchanger;

B. a refillable refrigerant vessel comprising,

1. a cylindrical sidewall,
2. a bottom end closure crimped to the bottom periphery of said vessel sidewall,
3. a top end closure crimped to the top periphery of said vessel sidewall,
4. a discharge valve and nozzle means fixed in said vessel top wall,
5. a refill valve means fixed in said vessel bottom wall;

C. a peripheral connector means for removable attachment to a bead formed by the crimped top periphery of said vessel, and including,

1. means for detachable connection to a bead formed by the crimped bottom periphery of said container whereby said vessel discharge valve and nozzle means engages in said container inlet port and is activated to permit the liquid refrigerant in said vessel to escape into said heat exchanger, to expand and vaporize to cool the contents of said container by the heat exchange principal,
2. vent means through said detachable connection means to vent the expanded gas from said exhaust port to the atmosphere.

3,842,618

ABSORPTION REFRIGERATION APPARATUS OF THE INERT GAS TYPE

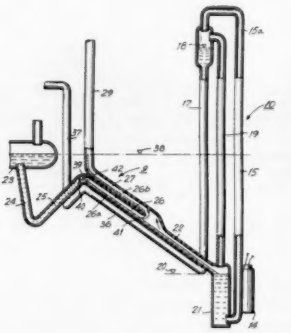
Demetre Kouremenos, Athens, Greece, assignor to Sarlab Aktiengesellschaft, Zurich, Switzerland

Filed Dec. 18, 1972, Ser. No. 316,385

Claims priority, application Sweden, Dec. 22, 1971, 16461/71

Int. Cl. F25b *15/10*

U.S. Cl. 62—490 **29 Claims**



1. In an absorption refrigeration system employing an inert gas as a pressure equalizing agent,

a. a circuit for circulation of absorption solution including a generator and an absorber and a heat exchanger therebetween having several passageways,

b. said generator including a pump for raising liquid by vapor-liquid lift action with vapor expelled from solution by heating to circulate solution in said circuit,

c. a part in said circuit for holding a column of solution,

d. the solution being raised in said pump under the influence of a reaction head formed by the column of liquid in said part,

e. said absorber including means providing an elongated path of flow for absorption solution and a vessel which receives solution from the elongated path,

f. said heat exchanger being disposed at a level lower than the liquid surface level in said absorber vessel,

g. said circuit comprising conduit means including a first heat exchanger passageway and said part for conducting absorption solution rich in refrigerant from said absorber vessel to said generator,

h. a condenser,

i. a vapor line for conducting from said generator to said condenser gaseous fluid including inert gas and vapor expelled at an elevated temperature from solution at said generator,

j. said vapor line including at least one of said heat exchanger passageways for transferring heat to rich absorption solution, and

k. means comprising a section of said conduit means constructed and formed to receive gaseous fluid diverted from said vapor line and to produce therein during normal operation of the system a gaseous obstruction respon-

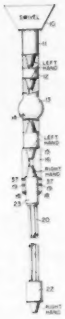
sive to receiving such gaseous fluid for restricting flow of rich absorption solution for said absorber vessel to said part sufficiently to lower the liquid surface of the liquid column in said part to a level lower than the liquid surface in said absorber vessel and maintain the reaction head for said pump.

3,842,619

REVERSIBLE KELLY SYSTEM FOR ROTARY DRILLING

Antoine Bychurch, Sr., 2648 Mercedes Blvd., New Orleans, La. 70114

Filed Aug. 16, 1972, Ser. No. 280,986
Int. Cl. F16d *3/06*
U.S. Cl. 64—23.5 **7 Claims**



1. A reversible Kelly sub-system for use in a drive system for rotary well drilling which includes an upper section of discrete elements (such as a swivel block, a Kelly cock and one or more adaptors) and in a lower section a Kelly unit, all screwed together during use, comprising:

an elongated, reversible Kelly having identical, screw joint connections at both ends whose direction of threading is opposite that of the discrete elements with which it is to be used;

a Kelly sub element having at one end a screw joint connection threaded in the same direction as that of the discrete elements for connection with the lower-most one of the discrete elements, and at its opposite end a Kelly screw joint connection threaded in the opposite direction for connection with either end of said reversible Kelly; whereby, the Kelly can be used in either driving direction and quickly and easily reversed in direction.

3,842,620

TORQUE TRANSMISSION DEVICE

Milton V. Scozzafava, Rowland Heights, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed Oct. 29, 1973, Ser. No. 410,961
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 C **8 Claims**

1. A torque transmission device comprising

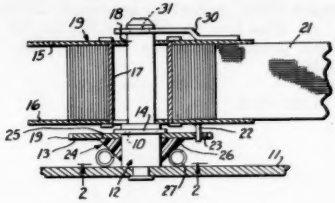
a pair of spaced members relatively rotatable about an axis,

a friction element engageable with a first one of said members,

said element having an at least substantially conical surface facing the other of said members,

means forming a slide bearing supporting said element for movement toward and away from said first member, and

an toroidal spring member tensioned over and surrounding said conical surface and engaging said other member



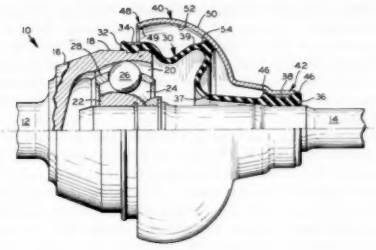
whereby to urge said friction element into frictional engagement with said first member.

3,842,621

SEALING BOOT AND COVER

Philip J. Mazziotti, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed June 15, 1973, Ser. No. 370,259
Int. Cl. F16d *3/84*
U.S. Cl. 64—32 F **7 Claims**



1. An improved sealing arrangement for a universal joint including:

a first member,

a second member having a shaft extending therefrom,

drive means connecting the first and second member to transmit torque therebetween,

the improvement comprising:

a. a flexible boot including an angularly disposed loop resiliently urged outwardly and an integral annular external lip extending outwardly therefrom said boot having one end connected to the first member and the opposite end connected to said shaft,

b. a hollow rigid cover surrounding at least a portion of the periphery of said boot and having first and second ends and an internal sealing surface in said first end,

c. said first end of said cover being spaced from said one end of said boot,

d. said external lip on said boot being in constant engagement with said internal sealing surface in said cover, and

e. means supporting the second end of said cover for maintaining the same co-axial with the axially stationary relative to the shaft.

3,842,622

JACQUARD PATTERN DRUM WITH REMOVABLE PATTERN HOLDING ELEMENTS

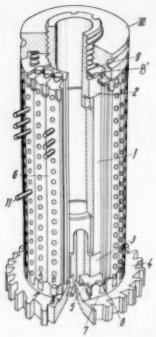
Wolfgang Muhlhausler, Tubingen, and Hermann Vollmer, Rottenburg, both of Germany, assignors to Fouquet-Werk Frauz & Planck, Rottenburg am Neckar, Germany

Filed June 12, 1972, Ser. No. 261,708

Claims priority, application Germany, June 21, 1971, 2130620

Int. Cl. D04b *15/66*

U.S. Cl. 66—50 B **11 Claims**



1. Cylindrical Jacquard pattern carrier drum for circular knitting machines comprising

a generally cylindrical body structure having a stem (**1,22**), a base (**4**) and means providing for rotation of the body structure;

a plurality of individual, separable elongated holding bars (**6, 26, 28, 60**) secured to said stem and spaced radially from the axis thereof and extending essentially parallel to the axis at the outside of the circumference of the pattern carrier;

means engaging the top and bottom end portions of the holding bars (**5, 9, 10**) to secure said separable holding bars to the cylindrical body structure (**6**) in circumferential radially spaced position surrounding the body structure to form at least a surface portion of the cylindrical carrier, and to rotate conjointly with the body structure, and further to locate the individual bars on the body structure with respect to a radial datum (A, B) on the body structure;

the bars being formed on opposite side surfaces with interengaging, matching recess and projection means (**15, 16**) to hold the bars in place against radial movement and in locked engagement with each other;

and projecting Jacquard control elements (**11**) projecting from said separable bars radially with respect to said stem.

3,842,623

KNITTING MACHINES

John Flavell, Coventry; Keith Jeffcoat, Nuneaton, and Max William Betts, Coventry, all of England, assignors to Courtaulds Limited, London, England

Filed May 9, 1973, Ser. No. 358,648

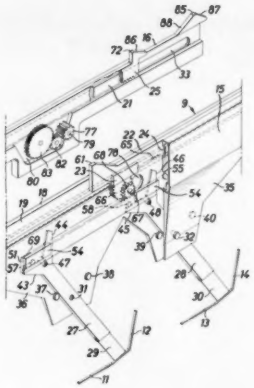
Claims priority, application Great Britain, May 12, 1972, 22330/72

Int. Cl. D04b *7/04*

U.S. Cl. 66—64 **2 Claims**

1. In a knitting machine in which sequential operation of needles takes place in successively opposite directions along at least one row of needles, said machine having at least one presser foot, arranged to be moved along said row of needles in synchronism with the actuation thereof and also arranged to be changed at the end of each movement along the row of needles in one direction from its original position to a position appropriate for its movement in the opposite direction, said machine comprising:

a. a support to carry said presser foot, b. means for moving said support to and fro along said row of needles to carry said presser foot in said directions along said row, the travel of said support in each direction being such as to cause said presser foot to overrun the point at which the presser foot is required to be operative, and



c. means mounting said presser foot on said support for changeover movement between a position it occupies for movement along said row of needles in one direction and a position it occupies for movement along said row of needles in opposite direction, the improvement comprising means for causing said changeover movement of said presser foot arranged to effect part of said changeover movement during overrunning movement of said support along said row of needles beyond a point at which the presser foot must be operative, and to effect part of said movement during return movement of the support over the overrun distance.

3,842,624

STRAIGHT-BAR KNITTING MACHINES

Emil Fess; Kurt Beitzinger, and Werner Koblitz, all of Ingolstadt, Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation of Ser. No. 141,580, May 10, 1971, abandoned. This application June 21, 1973, Ser. No. 372,107

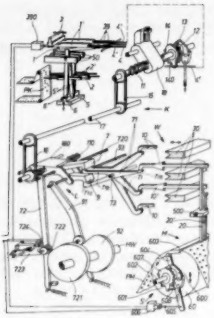
Claims priority, application Germany, May 29, 1970, 2026238

Int. Cl. D04b *11/00*

U.S. Cl. 66—82 R **10 Claims**

1. A straight bar knitting machine having a plurality of knitting divisions with the individual rows of needles extending lengthwise across each knitting division of the machine, yarn carriers for delivering a yarn to such needles, yarn carrier control means to control the path of said yarn carriers, selecting means selectively cooperating with any needle in such a row for selecting which of such needles participate in lace fashioning operations, decorative pattern control means including a first program-carrying element having control members, first reading means for sensing said control members carried on said first program-carrying element, first connecting means interconnecting said first reading means with the selecting means for actuating the selecting means to selec-

tively cooperate with such needles in response to sensing of control members by said first reading means, and selvedge control means separate from said pattern control means and including a second program-carrying element having control members, second reading means for sensing said control members carried on said second program carrying element and second connecting means for interconnecting said second reading means with said yarn carrier control means to selectively change the path of said yarn carriers in response to



sensing of control members by said second reading means, the improvement comprising third connecting means for interconnecting said second reading means with said first connecting means for controlling said first connecting means and the selecting means independently of said pattern control means and in response to sensing of control members of said second program-carrying element by said second reading means, the selecting means further being operable to select which of such needles participate in pressing operations.

3,842,625

DOUBLE NEEDLE ROW WARP KNITTING MACHINE AND METHOD OF OPERATING THE SAME

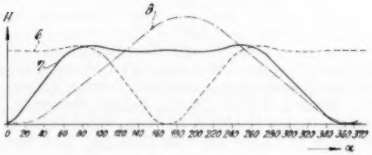
Rainer Apken, Rheydt, and Egon Fritz, Monchengladbach, both of Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

Filed July 10, 1972, Ser. No. 270,027

Claims priority, application Germany, July 9, 1971, 2134279

Int. Cl. D04b *23/02*

U.S. Cl. 66—87 **12 Claims**



1. In a method of operating a double needle-bar warp knitting machine having a main drive shaft and a plurality of guide bars operatively connected thereto, at least one of the guide bars forming stitches on both of the needle bars, the steps of displacing the guide bars in a single oscillating movement into operative relationships with both the needle bars for one rotation of the main drive shaft, and moving said needle bars to accommodate said displacing motions of said guide bars.

3,842,626

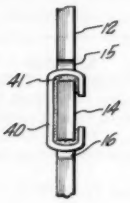
NEEDLE FOOT SHOE FOR KNITTING NEEDLE

Edward C. Stivers, Atherton, and Christopher L. Fischer, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 31, 1972, Ser. No. 221,906

Int. Cl. D04b *35/04*

U.S. Cl. 66—123 **8 Claims**



1. A knitting machine needle of the type which has a hook at one end, a shaft extending from the hook and a needle foot extending outwardly from the said shaft and adapted to ride in a needle foot guide channel having sidewalls wherein the improvement comprises shoe means positioned over at least that portion of said foot which contacts the side walls of said needle foot guide channel, wherein said shoe means comprises an outer layer of metal and an inner layer of polymer and has a shear modulus of at least 1,000,000 pounds per square inch and a loss tangent of at least 0.01.

3,842,627

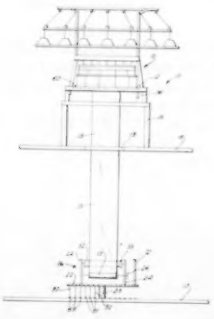
MEANS FOR ROLLING UP TUBULAR FABRIC PRODUCED BY A CIRCULAR KNITTING MACHINE

Rudolph G. Bassist, Lancaster, Pa., assignor to Travis Mills Corp., New York, N.Y., a part interest

Continuation of Ser. No. 845,143, July 28, 1969, abandoned. This application May 7, 1973, Ser. No. 358,179

Int. Cl. D04b *15/88*

U.S. Cl. 66—151 **11 Claims**



1. For use with a circular knitting machine which produces a fabric tube, the machine having a stationary frame and drive means for rotating parts of the machine with respect to the frame about its vertical axis, the fabric tube being rotated about its longitudinal axis while the machine is in operation:

a. take-up means for rolling up the flattened fabric tube,

b. means for supporting said take-up means, said support means being outside of the knitting machine frame and being completely independent of and unsupported by the knitting machine frame,

c. drive means for rotating said support means and hence said take-up means about an axis parallel to the longitudinal axis of the fabric tube as it leaves the machine, said drive means (c) being operable independently of the machine drive means, and

d. means responsive to movement of a rotating part of the machine for adjusting the speed of drive means (c) so that the latter rotates support means (b) in synchronism with rotation of the tube about its longitudinal axis, whereby the tube remains untwisted between the machine and said take-up means.

3,842,628

INDUSTRIAL TAPES

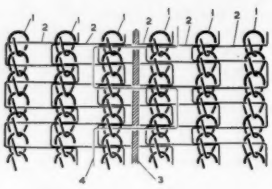
James Bennett, and Ashby Parva, both of Nr. Rugby, England, assignors to Specialized Tapes Limited, Hinckley, England

Filed Oct. 5, 1972, Ser. No. 295,337

Claims priority, application Great Britain, Oct. 28, 1971, 50407/71

Int. Cl. D04b 21/14

U.S. Cl. 66—193 **7 Claims**



1. A warp knitted industrial reinforcement tape having a knitted structure comprising:

a. chains of warp-knitted stitches formed of warp threads;

b. at least one backing thread laid into the knitted structure beneath the chains of warp-knitted stitches;

c. at least one carbon filament tow laid into the knitted structure over the chains of warp-knitted stitches; and

d. at least one holding thread laid into the knitted structure over the chains of warp knitted stitches and the carbon filament tow to hold the tow in the tape.

3,842,629

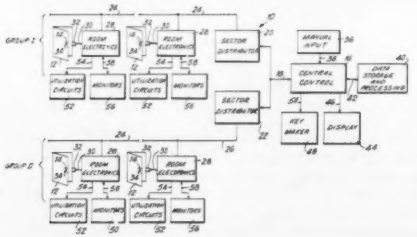
REMOTELY PROGRAMMABLE LOCK

Jerome Pazer, Dix Hills, and Michael C. Bach, Stony Brook, both of N.Y., assignors to Instrument Systems Corporation, Jericho, Long Island, N.Y.

Filed June 18, 1973, Ser. No. 371,074

Int. Cl. E05b 47/04

U.S. Cl. 70—264 **22 Claims**



1. A programmable lock for use with a key having at least one permanent magnet means adapted to produce a magnetic field of a predetermined orientation comprising latch means; a fixed lock member; a displaceable lock member mounted on said fixed lock member and formed for receipt of said key means; said displaceable lock member being selectively displaceable relative to said fixed member independent of said latch means; means for selectively coupling said displaceable lock member and said latch means for the operation of said latch means in response to the displacement of said displaceable lock member; means for normally blocking the operation of said coupling means and for selectively permitting such operation in response to said predetermined orientation of said magnetic field; and remotely actuable lock programming means operatively connected to said blocking means for selecting the magnetic field orientation in response to which said coupling means is permitted to operate.

3,842,630

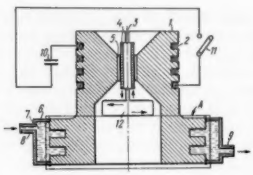
INDUCTOR FOR SHAPING PARTS BY PULSED MAGNETIC FIELD PRESSURE

Valery Mikhailovich Mikhailov, prospekt Komsomolsky, 10, kv. 150, and Lev Timofeevich Khimenko, poselok Pokatilovka, ulitsa Ulyanovskaya, 35, both of Kharkov, U.S.S.R.

Filed Mar. 19, 1973, Ser. No. 342,801

Int. Cl. B21d 26/14

U.S. Cl. 72—56 **4 Claims**



1. An inductor for shaping parts by pulsed magnetic field pressure comprising: a concentrator having an outer surface and being provided with an axial opening for placing a part to be shaped therein; a winding disposed at the outer surface of said concentrator; said concentrator having a radial slot extending axially along only a portion of the length of said concentrator, said slot having an end with an electric circuit at said end of the slot, said electric circuit having an inductance considerably higher than that of the circuit of said axial opening, said electric circuit extending axially from said slot over only a portion of the concentrator remaining beyond said end of the slot.

3,842,631

CAN BODY SHAPER

Anton A. Aschberger, Oak Lawn; Jack L. Avery, Park Forest; William J. Cartwright, Palos Park; Geoffrey J. Dean, Rockton; Oliver J. Tysver, Chicago Heights; Robert W. Wolfe, Oak Lawn, and Frederick H. Bautz, Hazel Crest, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

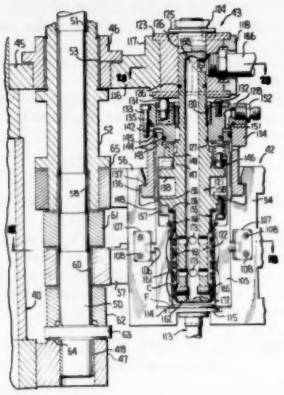
Division of Ser. No. 221,587, Jan. 28, 1972. This application Sept. 25, 1973, Ser. No. 400,498

Int. Cl. B21d 22/12

U.S. Cl. 72—63 **3 Claims**

1. In a shaper for tubular bodies, a shaping membrane assembly comprising a support having radiating fluid passages opening therefrom, a perforated sleeve surrounding said support for radially outwardly distributing fluid flowing from said passages, a replaceable membrane surrounding said sleeve, said membrane being tubular and having a closed axially

displaceable bottom wall, means for sealing said membrane to said support at only the end thereof remote from said bottom



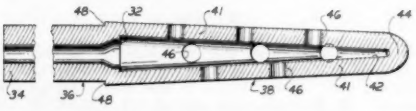
wall, and an axial port in said support directed toward said bottom wall.

3,842,632

METHOD OF MANUFACTURE OF LIGHTWEIGHT, HIGH-SPEED DENTAL DRILL

Milton E. Nelson, 2302 Sandpiper Way, Pleasanton, Calif. 94566

Filed Mar. 28, 1973, Ser. No. 345,482
Int. Cl. B21k *5/02*
U.S. Cl. 72—70 **7 Claims**



1. In a method of manufacturing a lightweight, high-speed dental drill having an integrally formed head portion and shank portion, and including the steps of selecting a piece of metal tubing having predetermined dimensions, and swage forming a first end of said tubing to substantially the desired external configuration of said head portion, the improvement comprising the step of:

reducing the wall thickness of said tubing over substantially the entire length of said head portion prior to said swage forming step, said reducing step being effected in an amount combining with said selecting step to produce a head portion after said swaging step having a mass distribution for maximization of rotational velocities, a central bore in said head portion extending over substantially the entire length thereof, and a wall strength in said head portion sufficient to withstand the high rotational velocities and loading forces during use.

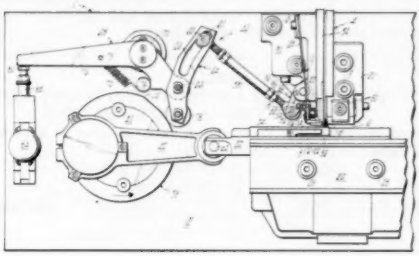
3,842,633

RESILIENTLY BIASED STARTER BLADE SUPPORTING ARM FOR THREAD ROLLER

Robert D. Morton, West Hartford, and Edward G. Grohoski, Litchfield, both of Conn., assignors to The Hartford Special Machinery Company, Simsbury, Conn.

Filed Dec. 14, 1973, Ser. No. 424,664
Int. Cl. B21h *3/06*
U.S. Cl. 72—90 **7 Claims**

1. A starter mechanism for high speed gating and feeding of individual lightweight work blanks from a feed chute of a thread rolling machine to a work station between relatively movable thread rolling dies and comprising a frame, a starter mechanism operatively mounted on the frame and including drive means and a starter assembly, the starter assembly having a movable starter blade for movement in opposite directions toward and away from a starting position at the work station, the drive means including a pivotable crank rotatably supported on the frame and engageable with the starter assembly for pacing movement of its starter blade, the pivotable crank providing a one-way drive to retract the starter blade away from its starting position upon rotation of the crank in



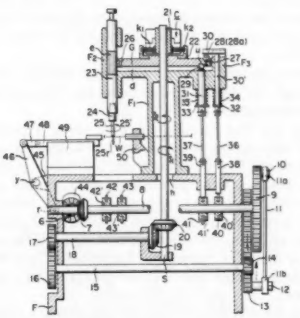
one angular direction, the starter assembly further including a starter blade supporting arm cantilever mounted at one end on the frame with an opposite free end supporting the starter blade for movement toward and away from its starting position at the work station, the arm being resiliently biased to urge the starter assembly toward engagement with the pivotable crank for effecting a following return motion of the blade toward its starting position, upon rotation of the pivotable crank in the opposite angular direction, and for providing a preselected starting force on each work blank to wedge it between the thread rolling dies.

3,842,634

APPARATUS FOR MAKING COILED SPRINGS

Takeji Matsuoka, No. 26-2-703, Oshima 3-chome, Koto-ku, Tokyo, Japan

Filed Dec. 12, 1972, Ser. No. 314,433
Claims priority, application Japan, Dec. 20, 1971, 46-102740
Int. Cl. B21f *3/04*
U.S. Cl. 72—142 **3 Claims**



1. An apparatus for making coiled springs comprising an arbor member for winding a wire in helical configuration thereon, a main shaft operatively connected to a driving power source so as to rotate alternately in one direction and the other, a driven gear wheel rotatably mounted on said main

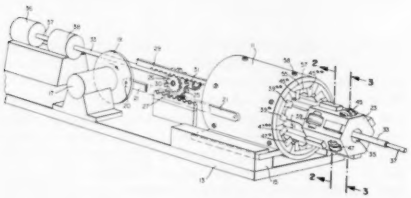
shaft and having peripheral teeth meshed with splined teeth formed on a spindle member having said arbor member connected thereto at one end thereof, abutments projecting respectively on the upper surface of said driven gear wheel and fittably mounted at the inner side of the peripheral teeth thereof, and abutment secured to the under surface of said driven gear wheel, stoppers abutted respectively with said abutments on said driven gear wheel and guided by the machine frame, a friction clutch consisting of friction discs respectively mounted on said main shaft and said driven gear wheel which slip upon engagement of stoppers with abutments so as to repeat continuously the winding, dwelling, releasing and dwelling of said arbor by way of said driven gear and splined teeth of said spindle member.

3,842,635

TUBE ROLLING MILL FOR PRODUCING TUBING WITH VARIOUS EXTERNAL CONFIGURATIONS

Fred W. Bibighaus, Wapakoneta, Ohio, assignor to Superior Tube Company, Norristown, Pa.

Filed Oct. 18, 1972, Ser. No. 298,617
Int. Cl. B21b *17/06*
U.S. Cl. 72—208 **2 Claims**



1. A method of producing flat sided externally configurated tubing from cylindrical tubing by cold rolling comprising the steps of:

positioning a mandrel within a cylindrical tube, the mandrel having a taper between spaced locations along its axis defining a working zone.

surrounding the tubing by tube contacting surfaces of a first plurality of rolls and a second plurality of rolls at spaced locations within the working zone along the axes of the tube and mandrel, the axes of rotation of the rolls at each of the spaced locations lying in common planes that are perpendicular to the axes of the tube and mandrel, the rolls in the second plurality each having at least one flat portion for contacting and shaping the outer surface of the tube,

reciprocating all of the rolls longitudinally of the tube through the working zone between a first position and a second position,

guiding the first plurality of rolls along a predetermined path through the working zone concurrently to move the rolls of the first plurality toward the axis of the tube and into contact with the outer surface thereof as the rolls proceed from the first position to the second position during reciprocation thereby concurrently exerting force from all sides on the tube and against the mandrel to cause metal in the wall of the tube to flow whereby the inside diameter and wall thickness of the tube are reduced,

guiding the second plurality of rolls along a predetermined path through the working zone concurrently to move the rolls of the second plurality toward the axis of the tube and into contact with the outer surface thereof as the rolls proceed from the first position to the second position during reciprocation thereby concurrently exerting force on the tube from all sides and against the mandrel to cause metal in the wall of the tube to flow thereby causing the outer surface of the tube to have flat sides as formed by the at least one flat portion of the tube contacting surface of each roll of the second plurality of rolls to produce the desired flat sided externally configurated tubing,

removing all of the rolls from contact with the tube at the end of the reciprocation, and

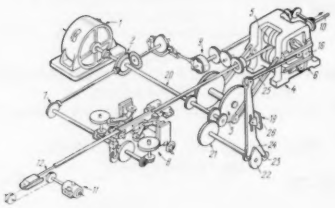
advancing the tube an incremental amount along the mandrel while maintaining the same rotational position of the tube.

3,842,636

ROLLS DRIVING GEAR FOR THE STAND OF PIPE COLD-ROLLING MILL

Sergei Nikolaevich Kozhevnikov, ulitsa Vystavochnaya, 3, kv. 73, Kiev; Arkady Semenovich Tkachenko, prospekt Gagarina, 63, kv. 22; Igor Vasilievich Murash, ulitsa Moskovskaya, 14, kv. 108, both of Dnepropetrovsk, and Anton Antonovich Shvedchenko, ulitsa Pestelya, 4, kv. 1, Nikopol, all of U.S.S.R.

Filed Nov. 21, 1973, Ser. No. 418,076
Int. Cl. B21b *17/10*
U.S. Cl. 72—208 **1 Claim**



1. A driving gear of rolls of stand of a pipe cold-rolling mill, comprising: cranks set on necks of said rolls; a mechanism for imparting reciprocating motion to said stand, kinematically coupled with the main drive of said mill; connecting rods hinged, with one end each, to said cranks, a slide block hinged to the other ends of said connecting rods and adjusted for reciprocating motion parallel to the rolling axis during the reciprocating travel of said stand; guides for the reciprocating motion of said slide block, secured on the housing of said stand; a device kinematically coupled with the main drive of said mill for moving said slide block at a speed permitting the turn of said rolls with a circumferential speed equal to the rate of metal creep within a deformation source during rolling.

3,842,637

COMBINE DRIVE TORQUE SENSING

Ronald E. Wilson, Lee's Summit, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 22, 1973, Ser. No. 325,956
Int. Cl. F16h *11/06*
U.S. Cl. 74—230.17 M **10 Claims**

1. A torque sensing variable diameter V-belt transmission assembly comprising:

a first sheave structure having

a central sleeve adapted at its inner diameter to slide onto one end of a power transmitting shaft and adapted to connect to said shaft so as to rotate therewith and

a first V-belt sheave section rigidly secured to and extending radially outward from one end of said central sleeve,

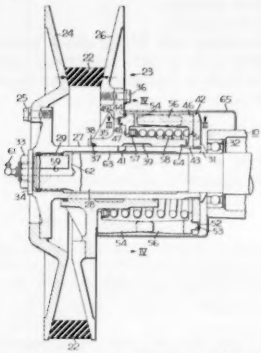
a second sheave structure having

a sleeve part rotatably and axially slidably mounted on the radially outer diameter of said central sleeve and

a second V-belt sheave section rigidly secured to and extending radially from said sleeve part,

a first cam member connected in axially separable torque transmitting relation to said central sleeve and presenting a first axially extending cam part,

a second cam member connected in axially separable torque transmitting relation to said second sheave structure and presenting a second axially extending cam part in axially shiftable torque transmitting engagement with said first cam part,



compression spring means between said cam members urging the latter axially away from one another, and

a retainer having portions in axial thrust transmitting relation to said cam members operable to limit relative axial movement of said cam members away from one another whereby said cam members and spring means are maintained together as a unitary package separable from said sheave structures.

3,842,638

ROLL-PIERCING MILLS

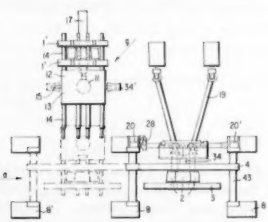
Paul Schmitt, Saarbruecken, and Gunter Bathge, Merschweiler, both of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed June 18, 1973, Ser. No. 371,194

Claims priority, application Germany, June 30, 1972, 2233078

Int. Cl. B21b *31/08*

U.S. Cl. 72—239 **10 Claims**



1. In combination with a rolling mill or like device having at least one material working roll means received in a roll stand,

an apparatus for removing said roll stand from said mill and returning it to said mill and for removing said roll means from said roll stand and replacing said roll means in said roll stand, comprising

means for transferring said roll stand together with said roll means to and from said mill in a direction normal to the direction of travel of the material being rolled and a roll means removing and replacing station arranged adjacent said mill, and

a roll means removing and replacing device arranged in said station for removing a used roll means from said stand and replacing it with a new roll means,

wherein each said roll includes roll mounting means,

openings formed in said roll mounting means for receiving pins carried by said roll means removing and replacing device.

3,842,639

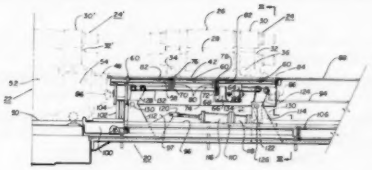
SIDE-SHIFTING MILL ROLL

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed June 20, 1973, Ser. No. 371,766

Int. Cl. B21b *31/08*

U.S. Cl. 72—239 **10 Claims**



1. Mill roll changing apparatus for positioning transversely of a rolling mill pass line and arranged for receiving and inserting mill rolls relative to a juxtaposed mill stand, said apparatus comprising a movable floor section normally covering a roll changing pit adjacent said mill stand, a support structure for said floor section and positionable within said pit, a number of rails on said floor section, driving mechanism for moving said floor section laterally of said support structure in a direction generally parallel to said pass line so that selected pairs of said rails can be laterally aligned with a pair of rails within said mill stand, and an elevating mechanism mountable within said pit and structured for elevating said floor section to a first position above an existing floor surrounding said pit so that said floor section can be moved laterally thereof and to a second position whereat said floor section is flush with said existing floor and to a third position whereat said floor section is recessed within said pit.

3,842,640

GUIDING MEANS FOR PIERCING MILL

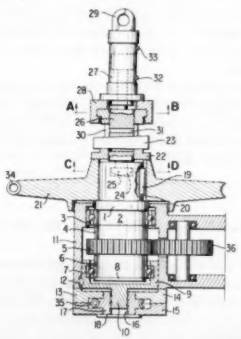
Paul Schmitt, and Manfred Hien, both of Saarbruecken, Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Mar. 5, 1973, Ser. No. 337,989

Claims priority, application Germany, Apr. 19, 1972, 2219894

Int. Cl. B21b *39/16*

U.S. Cl. 72—250 **8 Claims**



1. In combination with a workpiece guide disc for a piercing mill comprising:

a housing,

an arbor received in said housing having a portion extending from said housing,

said workpiece guide disc carried by said arbor portion,

means for adjusting said arbor to adjust said workpiece guide disc relative to a workpiece,

a power means having a first portion connectable to said extending portion of said arbor arranged to urge said disc into forcible contact with said arbor in a first direction coaxial to the axis of said arbor, and a second portion for applying a force to said arbor in a direction opposite said first direction and coaxial to the axis of said arbor to thereby forceably hold said disk in its operative position,

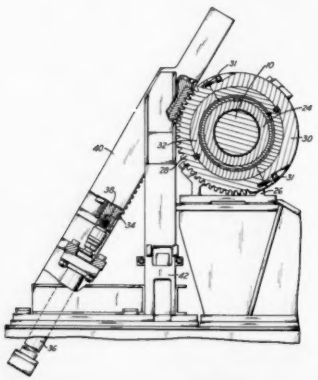
a restraining means having surfaces engageable with said power means and said disc for holding said disc against said arbor after said power means has established said forcible contact and its power has been discontinued.

3,842,641

POSITIONING MEANS AND METHOD FOR CONTAINERS OF A PRESS

Francis J. Kent, Wallingford, Pa., assignor to Wean United Inc., Pittsburgh, Pa.

Filed Apr. 27, 1973, Ser. No. 355,234
Int. Cl. B21c *23/00*
U.S. Cl. 72—263 **4 Claims**



1. In combination with a press having a number of billet containers and a number of working stations to which the containers are selectively brought,

common support means for supporting said containers,

means for supporting said common support means in a manner that the containers can be rotated from station to station, and

power means having a member drivenly connectable to said common support means, said member having a finite linear working stroke whereby said containers can be rotated a definite and accurate distance for their accurate registry in said stations.

3,842,642

DRIVING MEANS FOR CONTAINERS OF EXTRUSION PRESS

Francis J. Kent, Wallingford, and George Jaworski, Narberth, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed May 9, 1973, Ser. No. 358,748
Int. Cl. B21c *23/00*
U.S. Cl. 72—263 **5 Claims**

1. In combination with a press having one or more workpiece containers and means for moving said container in an axial direction towards and away from the die of said press incident to positioning the container in at least two selected positions relative to said die during various phases of the operation of said press, comprising:

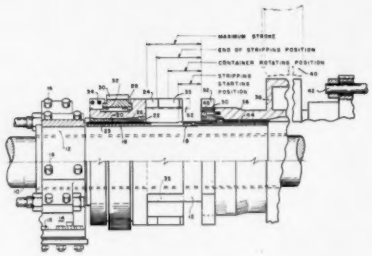
means for supporting said container in a manner that the container is free to move in both an axial and arcuate manner towards and away from said die,

said press having at least one tension column, and wherein said means for supporting said container includes a shaft member mounted concentric to said tension column,

a driving clutch member,

a driven clutch member,

means for mounting said driving clutch member on said shaft member so as to allow said driving clutch member to rotate relative to said shaft member but held against axial movement,



means for mounting said driven clutch member on said shaft member so as to allow said driven clutch member to both rotate and move axially relative thereto,

means for securing said driven clutch member to said container,

said driving and driven clutch members each including selectively engageable teeth for engaging each other in a driving relationship when said container is in at least one of said selected positions and for disengaging from each other in another of said selected positions, during which latter position and operating means can be operated on its return stroke, and

means having a power stroke and a return stroke for operating said driving clutch member when said container is in said one selected position for imparting rotation to said container.

3,842,643

PROCESSING OF WIRES

John Large, "The Rodings", Lancaster Ln., Parbold, Wigan, Lancashire; James Moss, 4 Newcroft Rd., Woolton, Liverpool, Lancashire, and David Dutton, 72 Highfield Ave., Appleton, near Warrington, Lancashire, all of England

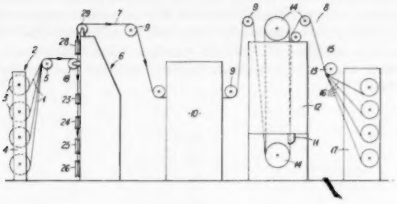
Continuation-in-part of Ser. No. 92,795, Nov. 25, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 303,846
Int. Cl. B21c *9/00*
U.S. Cl. 72—286 **6 Claims**

1. A method of manufacturing enamelled wire comprising:

a. drawing a bare copper wire by at least one capstan through a series of dies to reduce its area by from 30 percent to 80 percent;

b. passing the wire directly into enamelling apparatus including means determining the speed of the wire, during drawing as well as during subsequent processing, at so low a value that the speed of the wire through each one of said dies is so related to the reduction in cross-section effected

at that die that solely as a consequence of the low speed the wire is not heated above 150°C during drawing, and



c. driving said drawing capstan at a peripheral speed greater than the speed of the wire engaged thereby.

3,842,644

METHOD OF CONTRACTING OR COMPRESSING, MACHINE FOR PERFORMING THE METHOD AND ARTICLES PRODUCED ACCORDING TO THE METHOD

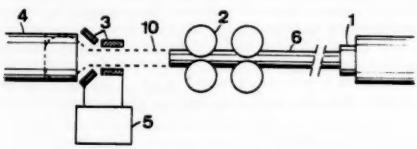
Robert Biesmans, Zichen, Belgium, assignor to Elphiac, Charleroi, Belgium

Filed Apr. 23, 1973, Ser. No. 353,777

Claims priority, application Belgium, Apr. 24, 1972, 3970

Int. Cl. B21j *1/06, 5/08*

U.S. Cl. 72—342 **9 Claims**



1. A compacting process wherein a metal bar is progressively heated, by induction heating means, while applying axial pressure thereto to cause radial enlargement of the heated portion of the bar, comprising the steps of:

providing induction heating and constant axial pressure to a first undeformed portion of said bar to produce initial radial enlargement thereof, said induction heating being applied to said bar from an inner source closely adjacent the surface thereof;

relatively moving said bar and inner source, in an axial direction;

inductively heating the portion of said bar thus initially enlarged, from an outer source adjacent said first source but spaced radially outwardly therefrom, while continuing application of said axial pressure, whereby said bar is further enlarged radially; and

relatively moving said bar and outer source in unison with said inner source.

3,842,645

SPRING ASSEMBLIES HAVING PARTICULAR APPLICATION TO FORMING DIES

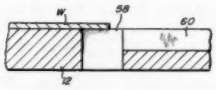
Harry G. Stevens, Union, and Robert E. Smith, Dayton, both of Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio

Filed Jan. 18, 1973, Ser. No. 324,650

Int. Cl. B21d *45/00*

U.S. Cl. 72—344 **10 Claims**

1. A caged spring assembly particularly advantageous for use in a die to be interposed between movable die means and a suspended stripper plate as a stripper plate biasing means independent of means to suspend the stripper plate, said assembly comprising spring means, means cupping one end portion of said spring means, means capping the opposite end portion of said spring means and means interrelating said cupping means and said capping means to contain said spring



means, said interrelating means including a part adjustable relative to said cupping and capping means, rotatively mounted in one thereof and having means providing a motion limiting engagement thereof with the other of said cupping or capping means to achieve a selected operative length of said spring means.

3,842,646

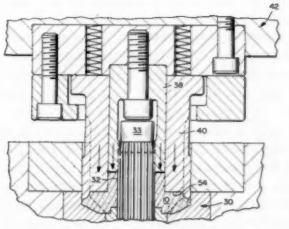
PROCESS AND APPARATUS FOR DENSIFYING POWDER METAL COMPACT TO FORM A GEAR HAVNG A HUB PORTION, AND PREFERRED POWDER METAL COMPACT SHAPE FOR USE THEREWITH

Howard A. Kuhn, Ardmore, Pa., assignor to The Gleason Works, Rochester, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,044

Int. Cl. B21k *1/30*

U.S. Cl. 72—354 **12 Claims**



1. A process for densifying a powder metal compact so as to form a product having (a) a main body portion, (b) a hub portion formed integrally with the main body portion, and (c) a bore extending through the main body and hub portions, said process comprising the steps of:

placing the compact in a die cavity so as to be supported by a core rod means carried in said die cavity,

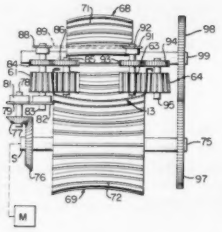
applying an axial force to a partially formed hub portion of said compact so as to press the compact against a closed end portion of the die cavity and to fully densify the hub portion of the compact prior to full densification of the main body portion of the compact, and

applying a separate axial force to a partially formed main body portion of said compact after full densification of said hub portion is substantially completed so as to prevent significant material flow between the hub portion and the main body portion.

3,842,647
METHOD AND APPARATUS FOR MAKING BUILDING PANELS

Gary A. Knudson, 7485 Upham Ct., Arvada, Colo. 80002

Filed Oct. 23, 1973, Ser. No. 408,936
Division of Ser. No. 226,173, Feb. 14, 1972, abandoned.
This application Oct. 23, 1973, Ser. No. 408,936
Int. Cl. B21d 13/04
U.S. Cl. 72—177 5 Claims



1. In apparatus for forming arched building panels using a generally U-shaped basic panel having a bottom portion and a pair of spaced upright side portions projecting upwardly from said bottom portion, the combination comprising:

a pair of cooperating tapered side corrugating rollers adapted to receive each side portion of the panel, each said roller having radially extending, circumferentially spaced fingers meshing with fingers of the associated roller of each pair whereby as the side portions are passed between the pairs of rollers alternate transverse grooves and ridges are formed therein,

upper and lower corrugating rollers adapted to receive the bottom portion of the panel, one of said upper and lower rollers having a convex contour and the other of said upper and lower rollers having a concave contour, said upper and lower rollers having a plurality of radially extending circumferentially spaced fingers with the fingers of the upper roller meshing with those of the lower rollers,

drive means to simultaneously drive said side corrugating rollers and said bottom corrugating rollers,

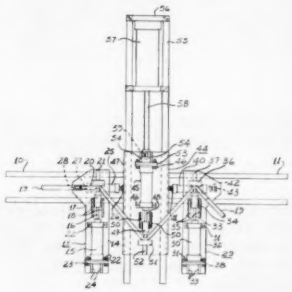
said drive means including a drive motor and a drive train between the drive motor and said side and upper and lower corrugating rollers, the drive train to said side corrugating rollers including a cam clutch which permits the side rollers to be driven directly from the drive motor until the panel enters between the upper and lower corrugating rollers at which time the side rollers rotate as a result of the panel being pulled through the side corrugating rollers by the rotation of the upper and lower corrugating rollers.

3,842,648
METHOD AND APPARATUS FOR BENDING A TUBULAR MEMBER

Walter Schwartz, Winnipeg, Manitoba, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada

Filed Mar. 14, 1973, Ser. No. 341,081
Claims priority, application Canada, Dec. 5, 1972, 158276
Int. Cl. B21d 11/07
U.S. Cl. 72—383 9 Claims

1. A method of bending a tubular member into a zig-zag configuration comprising the steps of flattening three sections of the tubular member at two outside locations and one central location with two outside flattening and gripping means and one central flattening and gripping means, respectively, thereby forming two outside flattened sections, said central means being movable in a perpendicular direction to a line through the two outside flattened sections and each said outside means being freely movable in the direction of said line; maintaining a pressure grip on each of the flattened sections with said outside means and said central means; moving said central means perpendicular to said line for a predetermined distance; simultaneously with the moving of the central means, allowing said outside means to be pulled towards each other along said line by said tubular member and controllably

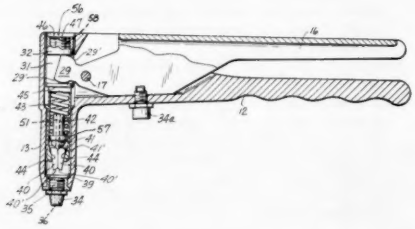


assisting the moving of said outside means, and hence the movement of said outside flattened sections, with fluid actuated means by controlling the flow of fluid to said fluid actuated means such that said assistance alone is unable to move the two outside flattened sections, thus forming a v-shaped configuration in the tubular member; releasing the pressure grip from the flattened sections; moving the tubular member to a new location wherein one of the outside flattened sections just formed is positioned in the place of the other outside section just formed and repeating the above steps.

3,842,649
RIVET SETTING TOOL FOR BLIND RIVETS

Anthony E. Di Maio, Georgetown, Mass., assignor to Marson Corporation, Chelsea, Mass.

Filed Jan. 29, 1971, Ser. No. 110,912
Int. Cl. B21j 15/38
U.S. Cl. 72—391 12 Claims



1. In a rivet setting tool having a body, selectively operable actuating means, support means for pivotally mounting the actuating means on the body and rivet setting means within the body responsive to pivotal movement of the actuating means, the improvement wherein said support means comprises:

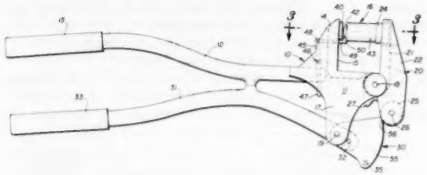
a. a pin-like element; and

b. a member supporting the pin, said member having a polygonal-shaped bearing surface; and

c. a polygonal-shaped surface carried by the body disposed in substantially surface-to-surface mating relationship

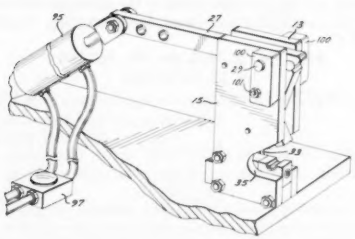
with respect to said first mentioned polygonal shaped surface.

3,842,650
HAND LEVER METAL PUNCH
Ruben J. Hartmeister, 1034 Sixth St., Golden, Colo. 80401
Filed June 18, 1973, Ser. No. 370,988
Int. Cl. B21d *43/28*
U.S. Cl. 72—409 **9 Claims**



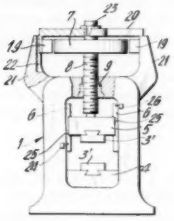
1. A hand lever metal punch capable of cutting or deforming heavy gauge metal comprising
   a. a head casting fixedly mounting on a handle,
   b. a die holder pivotally mounted in the head casting,
   c. a die mounted in one end of the die holder,
   d. punch mechanism mounted on the head casting for cooperation with the die on the die holder,
   e. a manually operable lever handle pivotally connected to the head casting,
   f. a cam pinned to the lever handle and pivotally connected to the head casting,
   g. means on the die holder engaged by the cam when the lever handle is moved toward the head casting handle to move the die into contact with the punch mechanism on the head casting, and
   h. means on the die holder engaged by the cam when the lever handle is moved away from the head casting handle to raise the die carrying end of the die holder and space it from the punch mechanism on the head casting.

3,842,651
TOGGLE PRESS
Frank E. Shaffer, 113 B Clearbrook Ln., Costa Mesa, Calif. 92626
Continuation-in-part of Ser. No. 204,153, Dec. 2, 1971, abandoned. This application May 7, 1973, Ser. No. 357,885
Int. Cl. B21j *9/18*
U.S. Cl. 72—451 **11 Claims**



1. A light weight high pressure toggle press comprising:
a frame;
relatively stationary die jaw means mounted on said frame;
movable die jaw means carried from said frame for movement from a closed position adjacent said stationary die means to an open position spaced from said stationary die jaw means and formed on its side opposite said stationary jaw means with a first bearing surface;
a lever arm formed with a second bearing surface;
pivot means pivotally carrying said lever from said frame;
a toggle link projecting between said first and second bearing surfaces and formed on its opposite extremities with third and fourth bearing surfaces, confronting said respective first and second bearing surfaces; and
first and second floating bearings disposed between said respective first and third and said second and fourth bearing surfaces, said toggle link being of sufficient length to rotate said link upon rotation of said lever arm to cause said link to be moved into substantial alignment between said pivot means and said first bearing surface as said movable jaw is shifted to its closed position to thereby provide a high mechanical advantage while applying only compressive forces to said bearing means.

3,842,652
SCREW PRESS
Toshiya Yonezawa, and Tadahiko Inuki, both of Kitayshu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Dec. 29, 1972, Ser. No. 319,683
Claims priority, application Japan, Dec. 28, 1971, 46-471280; Dec. 28, 1971, 46-471281; Dec. 28, 1971, 46-471279
Int. Cl. B21j *9/18*
U.S. Cl. 72—454 **5 Claims**

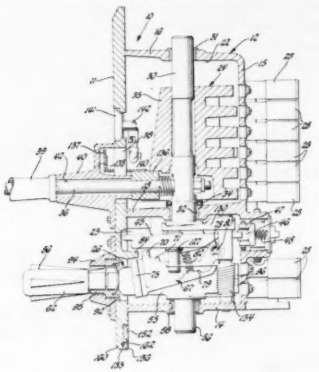


1. A screw press comprising, in combination, a frame, a saddle fixedly mounted relative to said frame, a slider element adapted to be driven into abutment with said saddle, a screw shaft rotatable about a fixed axis and having said slider element operatively connected thereto, said shaft being threadedly engaged upon said frame to impart a driving force to said slider element upon rotation of said shaft about said axis, electrical motor means including a stator and a rotor connected to produce a driving force for said press, said rotor being arranged as a flywheel of said press and being fixedly mounted upon said screw shaft to rotate therewith, and means mounting said stator for movement relative to said frame in directions parallel to said axis but constraining said stator to prevent rotative movement thereof about said axis, whereby said stator and said rotor move together in a fixed relationship relative to each other in directions parallel to said axis during rotation of said shaft.

3,842,653
REVERSING, THROTTLE AND BRAKE CONTROLLER WITH INTERLOCKS
George W. Blonn, Sr., Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 19, 1974, Ser. No. 443,474
Int. Cl. B60k *29/00, 21/00*
U.S. Cl. 74—878 **6 Claims**

1. A locomotive controller comprising a housing, a pair of control members mounted in said housing for oscillating

movement about a common axis, locking means carried on one of said control members and engagable with the other of said members and with said housing at predetermined relative positions thereof to lock said control members against movement in said housing, and operating handles for each of said control members, the handle for said one control member being removable and cooperating with said locking means



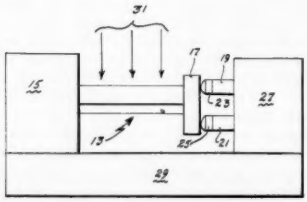
such that removal of said handle from said one member engages said locking means with said housing and said other control member while reinstallation of said handle causes disengagement of said locking means from said housing and said other control member, said locking means being arranged to prevent removal of said handle from said one member except when said locking means is engaged.

3,842,654

APPARATUS FOR THE DIRECT MEASUREMENTS OF THERMAL STRESSES

Thomas F. Bechtel, Greenville, S.C., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 14, 1973, Ser. No. 332,539
Int. Cl. G01n *3/08, 25/00*
U.S. Cl. 73—15.6 **2 Claims**



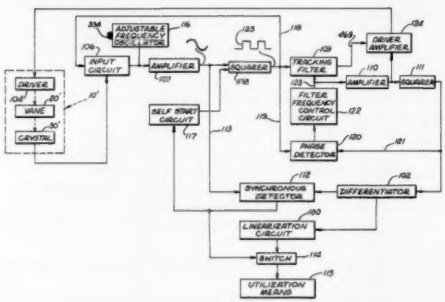
1. An apparatus for the direct measurement of thermal stresses in a constrained sample, said apparatus comprising an elongated rigid base member, a first upstanding support at one end of said base member, a second upstanding support at the other end of said base member, a rigid member vertically positioned between said upstanding supports and spaced therefrom, the constrained sample being disposed in the space between said first upstanding support and said rigid member, means for applying heat to the constrained sample, and means for measuring the stresses in the constrained sample caused by changes in temperature therein, said measuring means being positioned in the space between and in contact with said rigid member and said second upstanding support, said rigid member being constrained from movement by said second upstanding support member and said measuring means, thereby transmitting compressive forces from said sample to said measuring means for the measurement of the compressive forces to indicate direct thermal sterss line load and thermal stress moment in the sample, simultaneously.

3,842,655

FLUID DENSITY SENSING SYSTEMS

Gerald Lance Schlatter, and Charles Eveleigh Miller, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 187,948
Int. Cl. G01n *9/00, 9/36*
U.S. Cl. 73—32 **37 Claims**



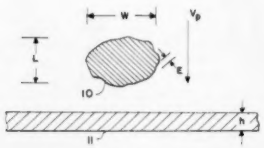
1. In a vibration densitometer, the combination comprising: a structure including a vibratable member immersible in a fluid; a magnetostrictive driver mounted on said structure including a coil and a magnetostrictive body, said body being mounted in a position to vibrate said member; a detector mounted on said structure to produce an alternating output signal of a frequency equal to the frequency at which said member is vibrated; and means connected from said detector to impress a level shifted alternating voltage on said coil which is in phase with the output signal of said detector, said alternating voltage having an average value larger than zero and of an amplitude sufficient to keep the current in said coil flowing in one direction only.

3,842,656

DETERMINING PARTICLE DENSITY USING KNOWN MATERIAL HUGENIOT CURVES

John D. Di Battista, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 5, 1973, Ser. No. 367,294
Int. Cl. G01n *9/00*
U.S. Cl. 73—32 R **2 Claims**



1. A method to determine the density of unknown material particles wherein the closing velocity is known between the

impacting particles and a plate of known material comprising: determining the material velocity that would be produced in the plate by the unknown material particle of known closing velocity;

determining the material velocity that would be produced in the plate by various known material particles having the same known closing velocity upon impact with the plate; deriving the unknown particle material density by making use of the facts that material velocity in the plate is ordered on impacting particle density alone with all other variables held constant and that similar density impacting particles having the same density produce the same material velocity in the same material plate;

by comparing the material velocity said unknown particle produced in the known material plate and the material velocities that were produced in the plate by the various known different material particles upon impact;

obtaining a coincidence between the unknown particle material velocity in the plate and a known particle material velocity in the plate; and,

measuring the plate material by:

measuring the velocity of material exiting from the plate opposite the particle impact side by recording (with a photomultiplier or photon tube) the initial particle plate impact flash;

starting a time counter;

recording the exiting plate material impact flash on a backstop (with a photomultiplier or photo tube), stopping the time counter, dividing the recorded time into the known distance between plate and backstop to obtain the exiting material velocity and dividing the exiting material velocity by two to obtain the plate material velocity.

3,842,657

LEVEL DETECTOR USING FLUID EJECTION FROM BORES COMMUNICATING WITH A VARIABLE PRESSURE CHAMBER

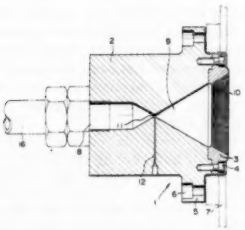
Tatsuo Ide, Fukuyama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,761

Claims priority, application Japan, Jan. 19, 1973, 48-8312

Int. Cl. G01b *13/00*; G01f *23/10*

U.S. Cl. 73—37.5 **6 Claims**



1. A level detector device for detecting the level of powdery or particulate material, comprising:

a detector body;

a constant pressure fluid source coupled to supply fluid under substantially constant pressure to said detector body;

a variable pressure chamber, having a horizontal axis, formed within said detector body and receiving said fluid from said source, said chamber including a reduced Venturi-type portion and an expanded generally conically shaped portion downstream of said reduced portion;

a pressure detecting opening communicating with said reduced portion of said chamber;

a plurality of fluid ejecting bores formed in the downstream side of said detector body and which communicate with said chamber, said fluid ejecting bores being arranged radially with respect to the horizontal axis of said chamber; and

means coupled to said pressure detecting opening to detect a variation of pressure within said chamber, said variation of pressure being representative of a rate of closure of said fluid ejecting bores by the action of the material whose level is to be detected.

3,842,658

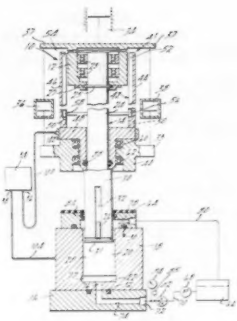
HONING AND PLATING APPARATUS AND METHOD EMBODYING BORE GAUGING MEANS

Myron P. Ellis, and Karl H. Kaake, both of Detroit, Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.

Division of Ser. No. 172,121, Aug. 16, 1971, Pat. No. 3,772,164. This application June 29, 1973, Ser. No. 376,401

Int. Cl. G01b *13/10*

U.S. Cl. 73—37.9 **1 Claim**



1. A method of gauging the cross-sectional dimension of a bore in a workpiece with a tool having a gauging portion thereon comprising the steps of filling said bore with a fluid, advancing said tool including said gauging portion into said fluid filled bore, and measuring the pressure of said fluid in said bore ahead of said gauging portion as said tool is advanced into said bore.

3,842,659

METHOD AND APPARATUS FOR TESTING THE HELIUM TIGHTNESS OF TUBULAR BODIES

Marcel Andre Bacroix, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Dec. 29, 1972, Ser. No. 319,821

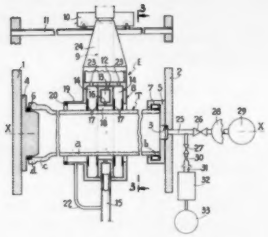
Claims priority, application France, Dec. 30, 1971, 71.47620; Oct. 9, 1972, 72.35703

Int. Cl. G01m *3/22*

U.S. Cl. 73—40.7 **13 Claims**

1. A method for testing the heliumtightness of a tubular body of a series of tubular bodies comprising the steps of creating a vacuum inside said body, subjecting said body to a flow of helium directed onto the outer surface of the body by displacing axially of the body an annular helium supply region surrounding the body and, at the same time, drawing off, isolating, and accumulating any helium which has passed through the wall of said body, and only said any helium, the accumulation being effected at optimum pressure and concentration for detection in a chamber connected to a helium detector, and detecting the accumulated helium, the helium

supply region being maintained at a distance from the two ends of the tubular body while the tubular body which has just



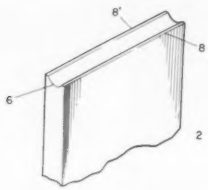
been tested is being replaced by a new tubular body of said series of tubular bodies.

3,842,660

TROUGH APPLICATOR

Henry Charles Van Buskirk, 1278 Forest St., Denver, Colo. 80222

Filed Mar. 19, 1973, Ser. No. 342,596
Int. Cl. G01n *1/00, 31/08*
U.S. Cl. 73—61.1 C **5 Claims**



1. A quantitative micro serum applicator device to apply a quantitative volume of serum quantitatively on electrophoresis paper comprising:

a thin, flat, generally rectangular handle member having a top end, a bottom end, opposed parallel side edges, and opposed parallel flat top and bottom surfaces;

the top end extending normal to the longitudinal axis of the handle completely between the opposite side edges thereof;

a trough extending longitudinally through the handle top end completely between the opposite side edges thereof, the ends of the trough opening out of the side edges, the trough being of a concave cross-sectional configuration when viewed along a plane normal to the handle and extending through the trough, the trough extending inwardly of the handle with its outermost edges disposed equal distance inwardly from the adjacentmost top and bottom surfaces of the handle; a pair of flat thin edges defined along the handle top end, the first edge extending between the handle top surface and the adjacentmost outermost edge of the trough, the second edge being of the same identical size and configuration as the first edge and extending between the handle bottom surface and the adjacentmost outermost edge of the trough;

the surfaces of each of the flat edges being highly polished and smooth;

the surface of the concave trough having a fine textured - matte like finish extending completely thereover to insure complete adherence of liquid serum samples thereto when placed thereon when the trough is placed in an inverted position;

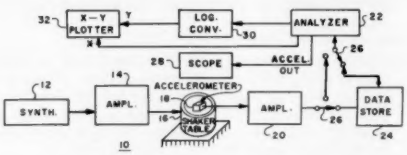
whereby inversion of the handle to invert the trough to apply the serum on electrophoresis paper provides engagement of the flat edges with the paper which, under light pressure, effects a pair of spaced apart depressions along the paper with the paper material between the depressions being embossed upwardly to blot and absorb all of the serum sample and with the knife edges leaving a slight imprint on the paper after being so lifted to mark the placement of the sample thereon.

3,842,661

SHOCK SPECTRUM ANALYSIS METHOD AND APPARATUS

Philip Marshall, Lexington, and William C. Stevens, Jr., Chelmsford, both of Mass., assignors to Marshall Research and Development Corporation, Burlington, Mass.

Division of Ser. No. 715,399, March 22, 1968, Pat. No. 3,659,456. This application Mar. 29, 1971, Ser. No. 128,698
Int. Cl. G01h *1/00*
U.S. Cl. 73—67.1 **9 Claims**



1. A method of analyzing an input acceleration applied to a test specimen comprising the steps of:

applying a transient force to a test specimen;

sensing the input acceleration of said specimen in response to said force;

providing an electrical signal proportional to said sensed input acceleration;

computing from said electrical signal response signals respresenting acceleration, velocity and displacement of a damped single-degree-of-freedom mass system of a specified natural frequency to said input acceleration;

automatically incrementing the response signals to another natural frequency for analysis and automatically resetting the response signals to their initial conditions after each frequency response has been computed;

gating the computed response signals in such a way as to separate those parts of the response signals defined as primary and residual;

applying the computed acceleration response signals to a peak sampling and holding circuit; and

displaying the peak values of the acceleration response signals.

3,842,662

PRESSURE RELEASE TEST DEVICE

Carroll L. Key, Jr., State College, and Walter C. Leschek, Pittsburgh, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,609
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.1 **7 Claims**

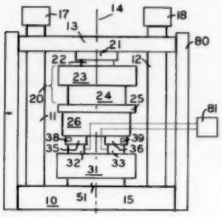
1. An improved test stand for applying acceleration and pressure forces to a pressure release sample comprising:

a. means, including a pressure head and a base for applying a pressure force along an axis in a given direction;

b. a low pass compression filter driveable along said axis by said pressure head;

c. a standard load mass driven along said axis by said low pass compression filter; and

d. a piezoelectric shaker mounted on said base and position-



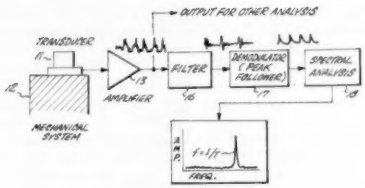
able along said axis to hold a pressure release sample between said mass and said shaker so that pressure and acceleration forces are applied to said sample.

3,842,663

DEMODULATED RESONANCE ANALYSIS SYSTEM

Darrell R. Harting, and John W. Taylor, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 1, 1972, Ser. No. 311,284
Int. Cl. G01m *13/02, 13/04*
U.S. Cl. 73—67.2 **16 Claims**



1. An apparatus for detecting flaws in mechanical components of machines, wherein the flaws and the natural vibration of the mechanical components in operation are a source of mechanical energy, comprising:

means for transforming the mechanical energy produced by the flaws and the natural vibration of the mechanical components into representative electrical signals, wherein said transforming means includes at least one transducer having a mounted natural resonant frequency sufficiently removed from the frequency of the natural vibration of the mechanical components such that said transducer is substantially only excited at its natural resonant frequency by the flaws in the mechanical components;

means for eliminating that portion of said electrical signals having frequencies with substantial energy other than said resonant frequency of said transforming means while retaining that portion of said electrical signals having frequencies substantially equal to said resonant frequency of said transforming means; and

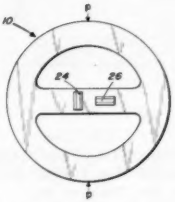
means for analyzing said retained signals to determine the existence of a flaw in a mechanical component of a machine.

3,842,664

THETA-SHAPED TEST SPECIMEN FOR COMPOSITE MATERIALS

Joseph C. Conway, Jr., State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1973, Ser. No. 348,382
Int. Cl. G01n *3/08*
U.S. Cl. 73—88 R **5 Claims**



1. A test specimen for determining the stress-related properties of a material comprising:

a unitary specimen fabricated from a sample of material whose properties are to be determined,

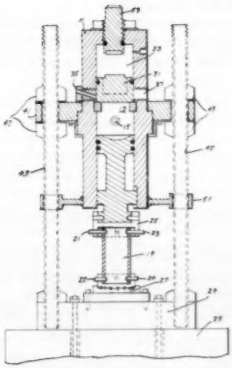
said specimen being substantially formed in the shape of the Greek letter θ (theta) and being fabricated from a fiber-reinforced composite material, said fibers having an orientation, and the diametral portion of the θ-shaped test specimen being oriented relative to said fibers in order to determine the properties of the test material in a predetermined direction relative to the orientation of said fibers.

3,842,665

PULSE PRESS TESTER

John V. Sober, Fort Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1973, Ser. No. 412,855
Int. Cl. G01n *3/30*
U.S. Cl. 73—93 **5 Claims**



1. An apparatus for a pulse press testing specimen comprising:

a. a pressure vessel including therein a back pressure chamber and a propellant chamber;

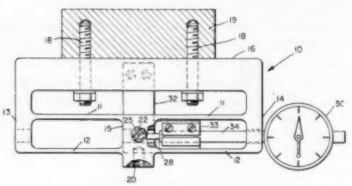
b. a reaction piston slidably contained in the pressure vessel at the base of the back pressure chamber and adjacent to the propellant chamber;
c. a force piston slidably contained within the pressure vessel and in proximity to the propellant chamber at the opposite extreme of the reaction piston;
d. means for securing the specimen in proximity to the force piston;
e. a pressure plate in the form of a stepped incline plane positioned beneath the specimen; and
f. a base anvil positioned under the pressure plate.

3,842,666

MECHANICAL FORCE GAUGE

Warren E. Greenwald, West Chester, Pa., assignor to Vishay Intertechnology, Inc., Malvern, Pa.

Filed Feb. 22, 1973, Ser. No. 334,529
Int. Cl. G01l *1/04*
U.S. Cl. 73—141 A **4 Claims**



1. A self-contained load sensing mechanical force gauge comprising:
a fixed end beam which is fixed at both ends and which is deformable in the direction of loading upon application of a load;
a member connected to the center portion of the fixed end beam, said member having a cam surface which passes through a contact point located at three neutral axes of the fixed end beam; and
an indicating instrument having a probe which engages the cam surface at the contact point for measuring the deformation of the fixed end beam at said contact point.

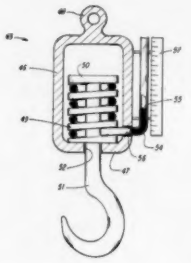
3,842,667

DISPLACEMENT INDICATOR MEANS FOR COIL SPRINGS

Carl J. Alexander, Moore Park, and Robert J. Boudeman, Hickory Corners, both of Mich., assignors to Wells Manufacturing Corporation, Three Rivers, Mich.

Filed Sept. 24, 1973, Ser. No. 400,265
Int. Cl. G01l *1/04*
U.S. Cl. 73—141 AB **12 Claims**

1. In combination with a coiled spring having a plurality of convolutions, a displacement indicator means for said spring which comprises a flexible tube closed at one end, situated between adjacent convolutions of said spring and in an abutting relationship therewith; a liquid in said flexible tube, filling at least a portion of said flexible tube between said convolutions and forming a meniscus; and a scale means mounted adjacent to said meniscus for determining change in position



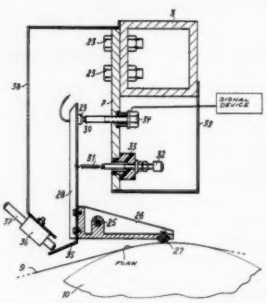
of said meniscus in response to a change in spacing between adjacent convolutions of said spring.

3,842,668

DEVICE FOR CHECKING MOVING WEBS OF PAPER OR THE LIKE, RELATIVE TO FLAWS

Paul Lippke, Walter-Rathenau-Str. 14, 5450 Neuwied, Germany

Filed Dec. 8, 1971, Ser. No. 205,891
Claims priority, application Germany, Dec. 10, 1970, 2060696
Int. Cl. B65h *25/14*; G01l *5/06*
U.S. Cl. 73—159 **7 Claims**



1. A device for checking of a web of paper, or the like, to detect the presence of flaws therein and comprising: a machine frame, guide means in the frame to engage a web being checked on one side to guide the web in a predetermined plane, and checking means in the frame on the other side of web in opposed relation to said guide means, said checking means comprising a beam parallel to said plane and extending transversely to the direction of travel of said web, a plurality of adjustable feelers rotatably journalled to said beam having two opposite ends connected to shaft means which are rotatably journalled in said machine frame in side by side relation on an axis parallel to the beam and having feeler elements thereon to engage the web being checked, a pair of contact means electrically connected to signal means and biased normally closed under the control of said feelers whereby movement of a feeler upon engagement of a flaw in the web by the feeler element on the respective feeler will release said contact means to signal the presence of flaws, bearings in the frame rotatably supporting the ends of the beam in the frame, first means for adjusting said bearings in the frame in a direction perpendicular to said plane, second means for adjusting

said bearings in said frame in the direction of the length of said plane, third means connected to said beam for rotation thereof about the axis of said bearings, and cooperating elements of abutment means operatively connected to said beam and to said frame to stop said beam in the checking position of said feelers.

3,842,669

APPARATUS FOR MEASURING QUANTITIES OF HEAT USED IN HOT-WATER HEATING INSTALLATIONS

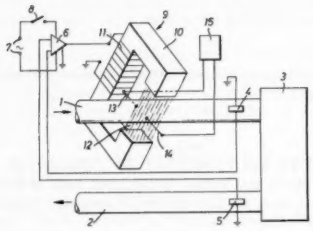
Poul Christian Carlos Iversen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 8, 1973, Ser. No. 339,183

Claims priority, application Germany, Mar. 22, 1972, 2213760

Int. Cl. G01r *17/16*

U.S. Cl. 73—193 R **4 Claims**



1. Apparatus for measuring quantities of heat used in hot water heating installations comprising a unit for receiving heated water having an inlet and an outlet, inlet and outlet pipes connected to said inlet and outlet of said unit, a differential amplifier having an input and an output, two temperature sensors respectively in said pipes in the vicinities of said inlet and outlet and being electrically connected to said input of said amplifier, an inductive flow meter having an input coil and output means for providing an electrical output signal which comprises an electrode gap disposed at right angles to the fluid flow and magnetic field, said input coil of said flow meter being electrically connected to said output of said amplifier to provide a field strength for said meter proportional to the output current of said amplifier, and an integrator connected to said output means of said flow meter.

3,842,670

IMPROVEMENTS IN MEASURING THE VELOCITY OF GASES

Thomas John Stirrat Brain, Hamilton, Scotland, assignor to National Research Development Corporation, London, England

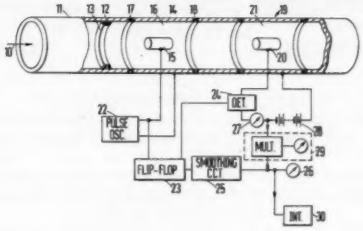
Continuation-in-part of Ser. No. 21,940, March 23, 1970, Pat. No. 3,688,106. This application Aug. 28, 1972, Ser. No. 284,065

Claims priority, application Great Britain, Sept. 16, 1971, 43220/71; Mar. 28, 1969, 16537/69The portion of the term of this patent subsequent to Aug. 29, 1989, has been disclaimed.

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 F **17 Claims**

1. A meter for making measurements related to gas flow, including ionizing means for ionizing at least part of a gas flowing along a duct, first and second electrode means for collecting ions spaced apart in the duct, a pulse generator adapted to apply, on receipt of a trigger signal, a pulse to the first electrode means to change the number of ions collected by the first electrode means, means for detecting resultant changes in the number of ions collected by the second electrode means and for passing a trigger signal to the pulse generator every time such changes are detected, and output means



for providing an output signal related to the occurrence of the trigger signals.

3,842,671

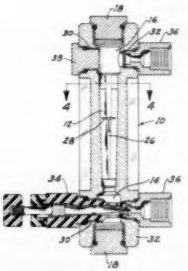
FLOWMETER

William G. Frizelle, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 11, 1973, Ser. No. 350,106

Int. Cl. G01f *1/00*

U.S. Cl. 73—209 **5 Claims**

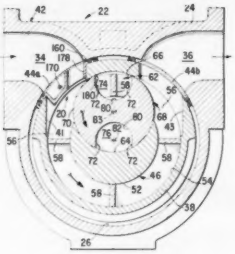


1. In a flowmeter, a rigid elongated injection molded body member of transparent thermoplastic material having a tapered float bore formed therein coextending with an intermediate portion of the length thereof and counterbores extending from the ends of said tapered bore to the ends of said body, a flow rate indicating float in said bore, and said intermediate portion of said body being fluted to substantially reduce the cross-sectional area thereof whereby the cross-sectional area of said body is reduced throughout its length while maintaining its rigidity, a pair of transverse opposed and axially aligned screw-threaded bores in each end of said body intersecting said counterbores, a conduit connector and a flow control valve mounted in screw-threaded engagement in said pair of transverse screw-threaded bores at one end of said body, a closure plug and a conduit connector mounted in screw-threaded engagement in said pair of transverse screw-threaded bores at the other end of said body, said conduit connectors having surfaces engaged by said control valve to control the flow through said tapered bore, and said flow control valve and said closure plug having similar screw-threaded portions whereby they may be interchangeably mounted at the ends of said body.

3,842,672
FLOW PROFILER FOR HIGH PRESSURE ROTARY METERS

George W. Schneider, Jr., Huntingdon Valley, Pa., assignor to The Singer Company, New York, N.Y.

Filed May 9, 1973, Ser. No. 358,784
Int. Cl. G01f 3/08
U.S. Cl. 73—253 12 Claims



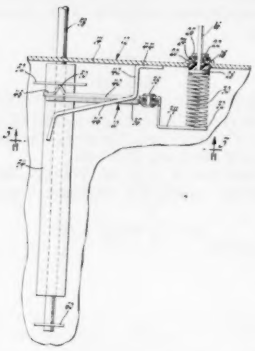
1. In a rotary meter, the combination of:
a. a housing having an inlet and outlet therein,
b. a housing having a chamber means formed therein,
c. a rotor journaled in the chamber means,
d. a rotor including a plurality of vanes,
e. a gate rotatively mounted in the chamber means to prevent fluid from the inlet from directly flowing to the outlet,
f. the gate having an open space adapted to receive successive vanes therein,
g. a transmission means interconnecting the rotor and the gate to rotate the gate in timed relation with the rotor and in the same direction whereby each vane is moved through the open space of the gate in its path of rotational travel within the chamber means, and
h. a profiler means connected in the inlet to increase the velocity of the flow and to concentrate the flow in the area of the gate by directing the flow thereto to produce an increase in the rotational speed thereof.

3,842,673
TANK LEVEL UNIT WITH WAVE POTENTIOMETER AND TRANSVERSE COIL SPRING DEFLECTION

John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1973, Ser. No. 389,962
Int. Cl. G01f 23/10
U.S. Cl. 73—313 3 Claims

1. A liquid level responsive sending unit for fuel tanks or the like comprising: a coil spring support within the tank interior; a first end of said coil spring supported by a tank wall; the second end of said coil spring attached to one end of an elongated pivotal member; an elongated stationary member having a portion extending generally in side-by-side relation with respect to said pivotal member and supported in the tank; an elongated wire-wound resistor supported by one of said members and having an end of said resistor electrically connected thereto; insulation means between said resistor and said one member for providing an electrical circuit extending through said one member, said connected end of said resistor and through said resistor; float in the tank interior movable as the level of liquid therein changes; means on said float operably engageable with the other end of said pivotal member to pivot said pivotal member by lateral deflection of said free end from the unstressed axis of said coil spring whereby relative movement between said resistor and the other of said members causes a sliding engagement and an electrical connection therebetween to vary the resistance of the circuit extending through said pivotal member, said resistor and said stationary

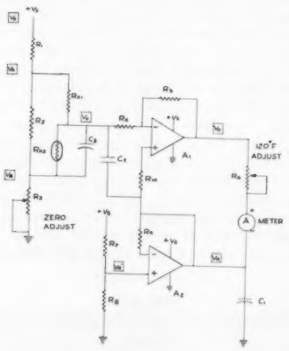


member caused by axial movement of said member along said elongated resistor.

3,842,674
REMOTE AIR TEMPERATURE INDICATOR

Robert L. Wilbur, and Arthur C. Stickney, both of Portland, Maine, assignors to The Eastern Company, Naugatuck, Conn.

Filed May 1, 1972, Ser. No. 249,369
Int. Cl. G01k 7/24
U.S. Cl. 73—362 AR 1 Claim



1. A remote temperature indicator comprising in combination:
a. a temperature sensing network connected with a supply voltage and including a thermistor element mounted at a remote point on a ship or the like and a zero adjust means connected between said network and actual ground wherein said adjust means is adjusted to set the output voltage of said network to equal a reference signal ground voltage when said thermistor element is at −40°F (−40°C),
b. a first operational amplifier connected as an inverting amplifier wherein said output voltage of said network is connected to the negative inverting input and said reference voltage is connected to the positive non-inverting input of said amplifier whereby said output voltage is inverted and amplified,

c. a meter connected to the output of said first operational amplifier whereby the meter reading is directly proportional to said output voltage of said network,

d. a calibration means for said meter connected in series between said output of said first operational amplifier and said meter whereby said calibration means is adjusted to insure that said meter reads 120°F (55°C) when said thermistor is at said temperature,

e. a reference voltage generator comprising a voltage divider connected between said supply voltage and said actual ground to produce a signal ground voltage therebetween, said voltage connected to the positive non-inverting input of a second operational amplifier operating as a non-inverting voltage follower whereby the output of said second amplifier is said reference signal ground voltage,

f. a first capacitor connected between said output voltage of said network and said reference signal ground voltage,

g. a second capacitor connected between said reference signal ground voltage and said actual ground, and

h. a third capacitor connected to said output voltage of said network and in parallel with said thermistor element whereby,

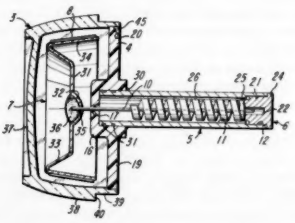
i. any strong electrical interference to said output voltage of said network and to said thermistor element will be effectively bypassed to said actual ground, permitting said indicator to function in the immediate vicinity of a high power radio transmitter.

3,842,675

THERMOMETER

George D. Hunt, Springfield, Ohio, assignor to The Ohio Thermometer Co., Springfield, Ohio

Filed Dec. 26, 1972, Ser. No. 318,366
Int. Cl. G01k *5/64*
U.S. Cl. 73—363.9 **5 Claims**



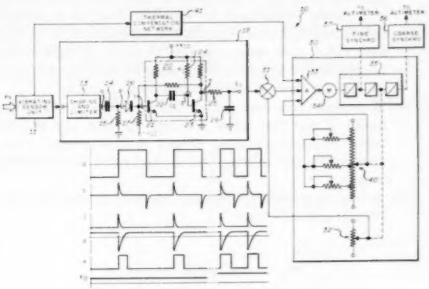
1. A plug-in thermometer comprising an elongated shaft, an indicator drum fixed to one end of said shaft, an elongated tubular stem housing the opposite end of said shaft, plug means closing said stem at the end thereof remote from said drum, the opposite end of said stem being fixed in a socket formed by a hollow cylindrical body portion in a transversely disposed disc member, a forward end of said body portion having a small central cylindrical bore therein providing an aperture through which said shaft extends to connect to said drum, a cup-like cover member for said drum, said one end of said shaft terminating within said cover member, said disc member being fixed within the open end of said cover member to enclose said drum and provide a bearing means for said shaft; said cup-like member, said disc member, said stem and said plug means being interconnected to provide a sealed enclosure for said drum and said shaft, a bimetallic element mounted within said stem to have one end thereof in connection with said enclosure and its other end in connection with said shaft, said shaft being mounted in a bearing relation to said plug means and said disc member for a balanced rotative movement and axial shift thereof under the influence of said bimetallic element in correspondence with changes in the temperature of its environment, and a temperature scale applied to the periphery of one of said indicator drum and said cup-like cover member and a cooperating indicator applied to the other to provide for a precise readout of the temperature of the environment to which the thermometer is applied.

3,842,676

ALTITUDE COMPUTER APPARATUS

Charles H. Brown, and Robert W. Robinson, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 104,374, Jan. 6, 1971, abandoned. This application May 3, 1973, Ser. No. 357,056
Int. Cl. G01l *7/08, 9/10*
U.S. Cl. 73—384 **7 Claims**



1. An aircraft altitude computer comprising

sensing means including a variable frequency oscillator coupled to an electrical driving circuit that vibrates a sensitive diaphragm which is responsive to changes in static pressure, said sensing means having a substantially linear transfer characteristic of vibrating frequency versus pressure altitude for producing an electrical output signal that varies in frequency in a substantially linear manner for changes in pressure altitude,

converting means having a linear transfer characteristic of variable frequency input versus amplitude of voltage output coupled to said sensing means for transforming said variable frequency electrical output signal into a variable amplitude voltage,

displacement servo means coupled to said converter means for providing an output shaft angle displacement in response to said variable amplitude direct current voltage, and

transducer means responsive to said output shaft angle displacement for producing electrical output signals representative of said changes in pressure altitude.

3,842,677

FLUID SAMPLING PROCESS AND APPARATUSES THEREFOR

Guydell O. Bufkin, and Thomas P. Moore, both of Amarillo, Tex., assignors to Pioneer Natural Gas Company, Amarillo, Tex.

Filed Nov. 15, 1971, Ser. No. 198,740
Int. Cl. G01n *1/14*
U.S. Cl. 73—421.5 R **19 Claims**

1. A sampling apparatus for connection to a fluid source and comprising, in operative combination a sample receiver subassembly, a timer subassembly, and fluid flow control subassembly;

a. the sample receiver subassembly comprising

i. a first gas-tight rigid sample container with an opening

near the bottom thereof, a lower cut-off valve at said bottom opening, and another opening to said container and another cut-off valve at said opening, and

ii. a rigid walled second chamber extending upwardly from a third valve, an upper outlet in said chamber at the upper end thereof, a lower orifice in said second chamber at the bottom thereof, differential valve means in said upper outlet having a passage for passing gas freely therethrough but preventing free passage of liquid therethrough and movable to seal passage of liquid therepast;

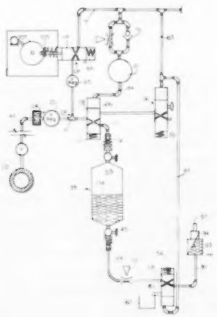
b. the fluid flow control subassembly comprising,

i. a constant output pressure output valve connected to a first conduit for connection to said fluid source,

ii. a first valve with a first inlet connected to the output of said constant pressure valve, a first spool in said first valve and first spool positioning means in said first valve resiliently yet firmly holding said spool in a first position with the first outlet of said first valve being operatively connected to the first inlet of a second valve, and disconnected from a second outlet of said first valve, said second outlet of said first valve connected to the upper cut-off valve of said another cut-off valve of said sample receiver subassembly,

iii. a second valve with a first inlet connected to said first outlet of said first valve, a second spool in said second valve, spool positioning means in said second valve connecting said inlet of said second valve to a blocking means,

iv. a bottom coupling connected to said sample receiver bottom cut-off valve;



v. a third valve with one inlet connected to said bottom coupling through a flexible constant volume conduit and an orifice therebetween and a second inlet connected to the lower orifice in said second chamber, third spool means in said third valve, third spool holding means in said third valve holding said third spool means in a first position whereat the second inlet thereof is connected to a second outlet and said second outlet is connected to the atmosphere and said second inlet and said one inlet are disconnected from each other;

c. timer means operatively connected to the spool means of said second and third valves and to a time delay means connected to said first valve means spool, said control means operative to

i. at a first step, simultaneously move said second spool in said second valve to connect the first inlet of said second valve to the atmosphere, and move said third spool in said third valve means to a second position to connect said first inlet of said third valve and the bottom cut-off valve and the one inlet connected to the lower orifice of said second chamber and disconnect the lower orifice of said second chamber from the atmosphere, and said third spool means in said third valve blocking connection between said lower orifice of said second chamber and said atmosphere when said control means moves said third spool in said third valve to said second position to connect said lower orifice of said second chamber to said lower outlet of said first sample container, and

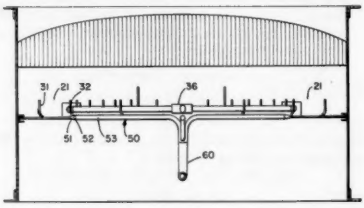
ii. at a second step, through said time delay means, move said first spool in said first valve means to connect the first inlet of said first valve and the outlet of the constant pressure valve to the other cut-off valve of said sample receiver assembly.

3,842,678

ISOKINETIC SAMPLING SYSTEM

Kenneth W. De Baun, and Robert W. Noll, both of Santa Rosa, Calif., assignors to Air Monitor Corporation, Santa Rosa, Calif.

Filed June 1, 1973, Ser. No. 365,847
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 A **15 Claims**



1. An isokinetic sampling system for measuring the amount of contaminant carried per unit volume of fluid flowing through a fluid conduit including:

fluid flow velocity equalizer means arranged in said conduit for producing substantially equal fluid flow velocities over the cross-sectional area of said conduit,

a fluid flow measuring station having a plurality of sensors aligned in a sensing plane, said station being positioned in said conduit immediately adjacent to and downstream of said fluid flow velocity equalizer means for sensing fluid flow velocity and flow rate through said conduit,

isokinetic sampling means positioned in said duct near said sensing plane and having a plurality of inlets distributed over the cross-sectional area of said conduit for receiving a sample of fluid and contaminant flowing through said conduit,

sample sensing means for sensing the velocity of said sample flowing into said isokinetic sampling means, and

control means responsive to the fluid flow velocity sensed by said measuring station and to the sample flow velocity for regulating the sample flow velocity relative to said fluid flow velocity.

3,842,679

AUTOMATIC SAMPLER APPARATUS OF MODULAR CONSTRUCTION

Kumiry Roy Iwao, Lafayette, and Brent Earl Wadsworth, Concord, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 5, 1973, Ser. No. 337,803
Int. Cl. G01d *11/24, 11/30;* G01n *1/12*
U.S. Cl. 73—423 A **2 Claims**

1. In a system for injecting fluid samples into a fluid receiver;

a. a fluid sample storage module comprising:

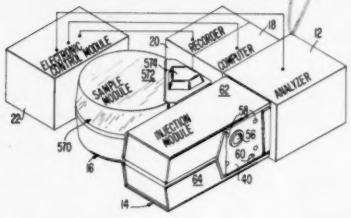
i. a sample fluid support for a plurality of separate fluid samples,

ii. sample fluid extraction means defining a station along said sample fluid support at which fluid is extracted from said sample fluid support; and

iii. laterally spaced side walls having a corner intersection, each said side wall defining first and second spaced access means located in the vicinity of said extraction station, said first access means being a hole in said side wall and said second access means being a slot extending to the edge of said side wall;

b. an injection module for receiving sample fluid from said storage module and comprising;

i. sample fluid injection means for directing a quantity of fluid into an analyzer;



ii. actuating means for controlling operation of said injection means; and

iii. at least a wall defining an access opening;

c. structure defining a fluid sample conduit extending between said modules for directing sample fluid from said storage module to said injection module through said second access means in a said side wall of said sample storage module and through said injection module access means; and

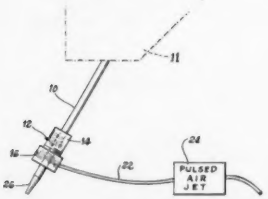
d. connecting means for detachably connecting said modules together with said third access opening aligned with one of said first or second access openings, said conduit structure extending between said modules through said aligned access openings.

3,842,680

GAS BLAST WIPING COLLAR FOR CLEANING PIPETTES

Carlisle N. Vollick, and Stanley J. Williams, both of London, Ontario, Canada, assignors to Bach-Simpson Limited, Ontario, Canada

Filed Aug. 9, 1972, Ser. No. 278,977
Int. Cl. B01l *3/02*; B08b *5/02*
U.S. Cl. 73—425.4 P **5 Claims**



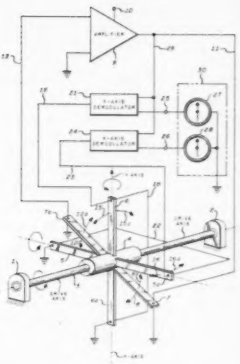
1. In a pipette construction wherein the pipette is immersed in a liquid during use, the improvement in means for cleaning the pipette comprising a gas dispensing means attached to the pipette, means for supplying gas to said dispensing means, said dispensing means comprising a member attached to the body of the pipette in a position spaced from the end of the pipette through which liquid passes into and out of the pipette, said member comprising a first tubular portion defining a central passage approximating the exterior configuration of said pipette, said first tubular portion being attached onto said pipette for maintaining the tubular portion in spaced relationship relative to the end of the pipette, and a second tubular portion threaded onto said first tubular portion thereby forming an orifice surrounding the pipette body and opening in a direction toward said end of the pipette, and including means for adjusting the size of said orifice, said orifice being defined between the tubular portions and being adjustable upon relative rotation of the tubular portions, and operation of said dispensing means applying a gas stream through the orifice to the exterior surface of said pipette thereby removing liquid particles from the pipette surface.

3,842,681

ANGULAR RATE SENSOR

Clarence D. Mumme, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,629
Int. Cl. G01c *19/56*
U.S. Cl. 73—505 **8 Claims**



1. An instrument for measuring angular rate of rotation of an object about at least a first axis comprising:

torsion rod means rigidly secured at each end thereof to said object and extending along a second axis normal to said first axis for torsional oscillation thereabout,

first and second oppositely extending balanced vibratory cantilever means rigidly secured to said torsion rod means between said ends, said first vibratory cantilever means including electrically responsive vibration driver means for applying torsional oscillations to said torsion rod means,

said second vibratory cantilever means including vibration pick-off means for providing an alternating electrical output signal of frequency proportional to the frequency of said torsional oscillations, and

opposed cooperative radially extending vibratory electrically responding sensor means rigidly secured to said torsion rod means between said ends, angularly spaced from said first and second oppositely extending balanced vibratory cantilever means in a common plane and responsive to angular rate of rotation about said first axis for generating an output electrical signal representative in polarity and amplitude of said angular rate of rotation about said first axis.

3,842,682

SPEED RESPONSIVE GOVERNOR MECHANISM

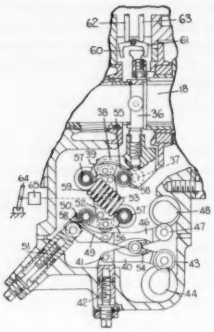
Joseph Louis Bloom, Droitwich, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 4, 1972, Ser. No. 278,012

Claims priority, application Great Britain, Aug. 4, 1971, 36626/71

Int. Cl. G01p *3/16;* **G05d** *13/38, 13/66*

U.S. Cl. 73—509 **14 Claims**



1. A speed-responsive governor arrangement comprising a body, a governor mechanism rotatably mounted in said body and including an output member movable relative to said body, a first lever pivotally mounted on the body and movable by said output member in response to changes in the speed of a shaft which provides a drive for the governor, said first lever having thereon a cam surface, a second lever pivotally mounted on the body and movable in response to a first parameter, a third lever pivotally attached to said body and pivotally mounted on the second lever for movement in response to a second parameter, a fourth lever pivotally mounted on said third lever and having a cam surface spaced from, and directed towards the cam surface on the first lever, a support mounted in said body and engaging said fourth lever at a location thereon spaced from the pivotal mounting thereof, whereby the cam surface on the fourth lever is movable relative to the cam surface on the first lever in response to said first and second parameters, a device angularly movable relative to the pivotal axis of the first lever and a spring carried by said member and acting to urge said cam surfaces apart, whereby angular movement of said device varies the moment of the spring force on the first lever in accordance with the position of the fourth lever.

3,842,683

UHF TUNER ARRANGEMENT

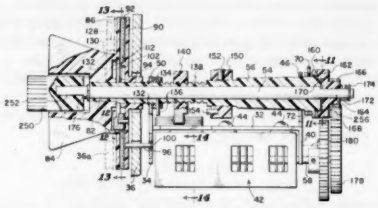
Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Continuation of Ser. No. 174,722, Aug. 25, 1971, abandoned. This application Apr. 13, 1973, Ser. No. 350,742

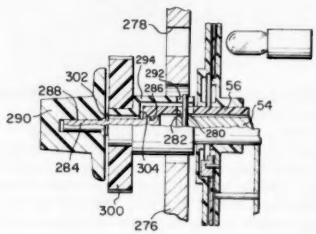
Int. Cl. F16h *35/18*

U.S. Cl. 74—10.41 **36 Claims**

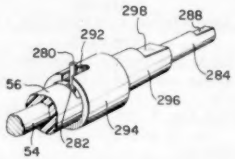
1. The combination of, a UHF tuner having a continuously variable main tuning shaft rotation of which is effective selectively to receive signals from all television stations in the UHF television band, a selector shaft, a detent wheel secured to said selector shaft and having ten indentations in the periphery thereof, spring biased detent means adapted to engage the indentations of said wheel as said selector shaft is rotated, thereby to establish ten different equally spaced detent positions for said selector shaft a units dial member mounted on and rotatable with said selector shaft, a tens dial member



concentric with said selector shaft, means interconnecting said tens and units dial members so that said tens dial member is changed one tens digit position for each rotation of said



units dial member, gear means interconnecting said selector shaft and said main tuning shaft, and means for spring loading said gear means against said detent wheel so that the position



of said main tuning shaft is precisely determined by said detent wheel for all of the UHF television stations in the UHF television band.

3,842,684

BICYCLE TRANSMISSION

Leroy P. Lozier, P.O. Box 43, Mesille, N. Mex. 88046

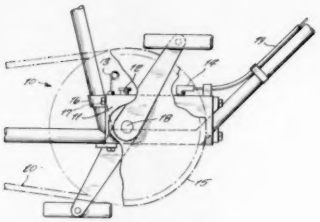
Filed May 17, 1973, Ser. No. 361,307

Int. Cl. F16h *11/04;* **B62m** *5/00*

U.S. Cl. 74—217 B **4 Claims**

1. In a bicycle transmission, the combination of a gear box mounted in place of a pedal crank, said gear box containing gear train arrangements, said gear train arrangement on an idler shaft to other gears and returns to a sp.ocket and transmitted to a rear bicycle wheel by means of a chain, and a lever

arm for gear selection being mounted at handle bars of the bicycle for changing gears by an operator, said lever arm being



attached to selector forks inside transmission for changing to a desired gear ratio.

3,842,685

TRANSMISSION UNIT

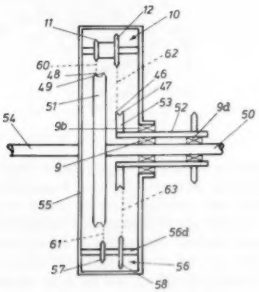
Arthur Philpott, Ferndale, Whittaker Ln., Little Eaton, and Reginald Samuel Fuher, 7 Boulton Dr., Alvaston, both of England

Continuation-in-part of Ser. No. 295,950, Oct. 10, 1972, abandoned. This application Feb. 5, 1974, Ser. No. 440,060

Claims priority, application Great Britain, Oct. 9, 1971, 47123/71

Int. Cl. F16h *9/04, 3/52, 3/44*

U.S. Cl. 74—217 C **19 Claims**



1. A transmission unit having an input shaft, an output shaft in co-axial alignment with the input shaft, a sprocket wheel carrying member secured to the input shaft and extending generally radially therefrom, a first sprocket wheel co-axially mounted on the output shaft, at least one drive sprocket wheel assembly mounted on the sprocket wheel carrying member, each drive sprocket wheel assembly at least including a primary and a secondary sprocket wheel, at least one drive sprocket assembly in which the primary and secondary sprocket wheels are adapted to be releasably locked in a desired rotational position relative to one another, a chain extending about the first sprocket wheel and the primary sprocket wheel of the or each individual drive sprocket wheel assembly, a second sprocket wheel rotatably received on the output shaft, a further chain extending about the second sprocket wheel and the secondary sprocket wheel of the or each individual drive sprocket wheel assembly, and means for controlling the speed of rotation of said second sprocket wheel to control the speed of rotation of said output shaft.

3,842,686

FLOATING-NUT MOUNTING

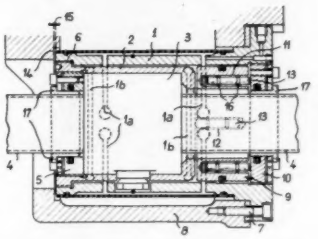
Bruno Dressler, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine), France

Filed Feb. 23, 1973, Ser. No. 335,174

Claims priority, application France, Mar. 7, 1972, 72.07847

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.8 A **6 Claims**



1. A floating nut mounting for a screw and nut mechanism controlling the movements of a machine-tool or like element, comprising a case containing the nut, a first member driven by the nut, a second tubular member having one end secured to said case and the other end secured to said driven member, said second tubular member including two spaced sets of four transverse slots opposed by pairs in parallel adjacent planes and shifted perpendicularly to each other between adjacent pairs so as to form between these slot planes two ring portions acting as universal flexible couplings.

3,842,687

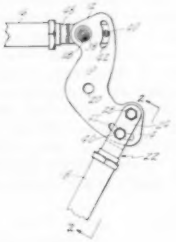
BALLISTICALLY TOLERANT BELLCRANK/ROD-END

John David Fansler, Newtown, and Stanley F. Okarma, Huntington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 14, 1973, Ser. No. 424,987

Int. Cl. G05g *7/02*

U.S. Cl. 74—469 **8 Claims**



1. In an aircraft control system,

a bellcrank, and

at least one control rod connected to said bellcrank,

said connection including,

first means attaching an end of said control rod to said bellcrank and providing a primary pivot

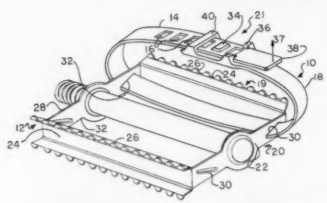
second means adjacent said first means attaching the end of said control rod to said bellcrank and providing a secondary pivot,

and means permitting limited relative motion between said bellcrank and said control rod about said primary pivot.

3,842,688
FOOT RETAINING DEVICE FOR A BICYCLE PEDAL

Martin R. Baginski, Austinburg Twp., Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio

Filed June 29, 1972, Ser. No. 267,439
Int. Cl. G05g 1/14
U.S. Cl. 74—594.6 2 Claims



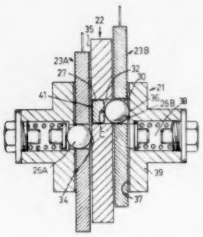
1. An apparatus comprising a bicycle pedal and a foot retaining device to retain a cyclist's foot on said bicycle pedal and provide for quickly releasing the cyclist's foot from said pedal, said foot retaining device comprising an elongated resilient strap member having first and second strap portions, said bicycle pedal having a plurality of pedal frame members having inboard, outboard and side portions, said inboard and outboard portions of said frame members having openings therethrough for receiving said strap member therein and securing said strap member thereto, said first elongated resilient strap portion having at least one aperture therein, said first and second strap portions movable between a locked position in which position the cyclist's foot is retained on said pedal and a released position in which position the cyclist's foot is released from being retained on said pedal by said first and second strap portions, said second strap portion having guide means for restraining relative movement between said first and second strap portions when in the locked position, a protrustion positionable in said one aperture of said first strap portion to prohibit relative movement in a lateral direction between said first and second strap portions when in the locked position, and retainer means for retaining said first and second strap portions in the locked position and releasable upon exertion of a force on one of said strap portions in a direction other than a lateral direction to allow for a quick release of the cyclist's foot, said retainer means including opposing extensions, at least one of said extensions movable upon movement of said first and second strap portions between the locked and the released position, said second strap portion having means defining apertures adjacent to each of said opposing extensions to allow said extensions to flex upon movement of said first and second strap portions between the locked and released position and wherein said extensions include a surface coacting with a surface of said first strap portion to retain said first and second strap portions in the locked position.

3,842,689
MULTIPLE STATION CONTROL SYSTEM

Nils Olof Manus Bagge, Gothenburg, Sweden, assignor to AB Volvo Penta, Goteborg, Sweden

Filed Feb. 12, 1973, Ser. No. 331,582
Int. Cl. G05g 5/06
U.S. Cl. 74—479 6 Claims

1. In a two station control system, two operating slides connected for operation from respective said stations, a control slide, each said slide having a neutral position, latch means carried by one of said operating slides for operatively engaging said control slide when said one slide is moved from its neutral position, and means responsive to said movement

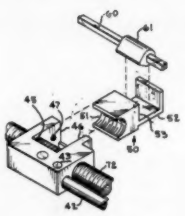


of said one slide to dog the other said operating slide in its neutral position.

3,842,690
AUTOMATICALLY DISENGAGEABLE MANUAL CONTROL

Ronald A. Gulick, Sugarland, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed May 10, 1973, Ser. No. 359,113
Int. Cl. F16h 25/00
U.S. Cl. 74—625 10 Claims



1. In a device for controlling a further member, wherein said device includes an external power supply for exercising said control and also includes back-up means for exercising said control, the addition of means for automatically engaging and disengaging said back-up means as a function of said external power supply to said device, said automatic means including: means releasably coupling said back-up means to said further member, said coupling means including;

linearly movable piston assembly, means for causing movement of a linkage means, said movement causing means being movable with said piston assembly, and linkage means including a gear and a cam member, said cam member being so positioned as to cause said engagement or disengagement as a function of the position of said gear.

3,842,691
PLANETARY TRANSMISSION

Dennis W. Shea, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

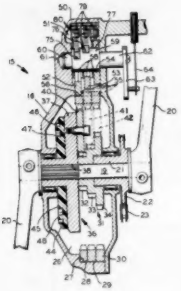
Filed May 9, 1973, Ser. No. 358,755
Int. Cl. F16h 57/10, 3/44; F16d 41/24
U.S. Cl. 74—768 25 Claims

1. A transmission comprising, in combination:

a. input and output means for such transmission with said input means being adapted for rotation in both a forward and a reverse direction for driving said output means in a forward and reverse direction, respectively,

b. at least two selectable power paths for drivingly connecting said input and said output means,

c. control means for selecting the desired one of said power paths and



d. cam means responsive to reverse rotation of said input means for selecting a predetermined one of said power paths and for maintaining said power path during continued reverse rotation.

3,842,692

OPERATION CONTROL METHOD FOR A SPLIT-TYPE HYDROSTATIC POWER TRANSMISSION

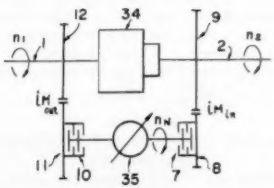
Takayuki Miyao; Hiroaki Maeda, both of Toyota, and Masanori Sato, Nagoya, all of Japan, assignors to Aisin Seiki Co. Ltd., Aichi-ken, Japan

Filed Apr. 6, 1973, Ser. No. 348,537

Claims priority, application Japan, Apr. 7, 1972, 47-35408

Int. Cl. F16h *3/44*

U.S. Cl. 74—786 **5 Claims**



1. An operation control method for a split-type hydrostatic power transmission connecting an input shaft to an output shaft through a differential hydrostatic unit, and selectively connecting another hydrostatic unit, connected to said differential hydrostatic unit by means of a hydrostatic circuit, to one of said input shaft and said output shaft by a switch connecting means, which comprises the steps of:

measuring the relation between the ratio of the displacement of said another hydrostatic unit to the displacement of said differential hydrostatic unit under liquid leakage conditions, and the ratio e of the rotary speed of said output shaft to the rotary speed of said input shaft, in each case wherein said another hydrostatic unit is connected to one of said input shaft and said output shaft; and

switching the connection of said another hydrostatic unit from said one of said input shaft and said output shaft to the other of said input shaft and said output shaft at the time when said rotary speed ratio attains a variation value which is less than that of a reference speed ratio of zero of the rotary shafts associated with said differential hydrostatic unit.

3,842,693

HYDRAULIC CONTROL DEVICE FOR CONTROLLING DOWNSHIFT OF AUTOMATIC TRANSMISSION

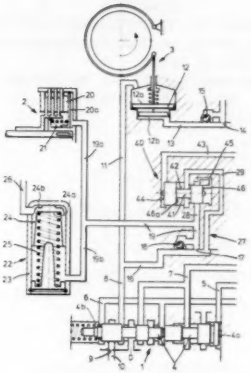
Gerd Oberpichler, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 20, 1973, Ser. No. 381,148

Claims priority, application Germany, July 31, 1972, 2237351

Int. Cl. B60k *21/06*

U.S. Cl. 74—864 **3 Claims**



1. Hydraulic control apparatus for controlling the automatic shifting of planetary gear means driven by an engine when down-shifting an automatic transmission comprising:

clutch means associated with a higher gear of the transmission, said clutch having a clutch piston with an application end;

pressure reservoir means having a double-ended reservoir piston with a spring load on one end and transmission servo pressure on the other end, a conduit connecting the chambers containing the application end of the clutch piston and the spring-loaded end of the reservoir piston; brake means associated with a lower gear of the transmission, said brake means comprising a double-ended brake piston with an application end and a release end, servo pressure being applied to the application end of the brake piston through a brake throttle;

main slide valve means comprising a piston that moves as a function of control pressures derived from the vehicle velocity and engine load, said main slide valve means connecting a main valve conduit to the servo pressure when the vehicle is in the higher gear and connecting it to the atmosphere during a shift to a lower gear, the main valve conduit being directly connected to the release side of the brake piston, and to the application end of the clutch piston and the spring-loaded end of the reservoir piston through a clutch throttle and a clutch conduit in series; and

control slide valve means having a double-ended control valve piston, the position of the control valve piston controlling the passage of hydraulic fluid through a bypass conduit which bypasses the clutch throttle, the control valve piston having the pressure in the clutch conduit applied to one end and a vehicle-velocity-dependent pressure applied to the other end, whereby a change to a lower gear causes said main slide valve means to vent the pressure in the main valve conduit, causing application of said brake means in a fixed period of time and allowing the clutch means to remain engaged by causing the pressure in the clutch conduit to decrease slowly through the clutch throttle until said pressure reservoir has been drained by the opening of the bypass conduit when the velocity-dependent pressure on said control slide valve

exceeds the slowly decreasing pressure in the clutch conduit, characterized in that;

the control valve piston is a stepped piston with the end in contact with the velocity-dependent control pressure being larger in area than the opposite end in contact with the clutch conduit pressure by such an amount that the control valve piston is moved to open the bypass conduit when the clutch conduit pressure and the velocity-dependent pressure are equal.

3,842,694

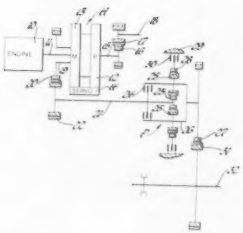
HYDROMECHANICAL TRANSMISSION AND CONTROL

Jerry R. Marlow, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 14, 1973, Ser. No. 359,764

Int. Cl. B60k ; F16h 47/04

U.S. Cl. 74—867 **6 Claims**



1. An engine driven transmission and control comprising: input means drivingly connected with the engine; output means; variable positive displacement hydrostatic transmission means drivingly connected with said input means including displacement control means for controlling the drive ratio of the hydrostatic transmission; gearing means drivingly connected between said hydrostatic transmission and said output means including selectively engagable drive ratio establishing means for selectively establishing low and high ratio drives; a source of fluid pressure; hydrostatic transmission control means including valve means in fluid communication with said source for providing a variable pressure source for selectively controlling the displacement control means between minimum and maximum values at a setting determined by the pressure level of the variable pressure source when the low ratio is established in said gearing means; and shift control means in fluid communication with said source of fluid pressure for controlling the interchange of said drive ratio establishing means including means for directing fluid pressure to said valve means to reduce the pressure level of the variable pressure source and the hydrostatic transmission displacement and for permitting the variable pressure to be repeated for selectively controlling the displacements between the minimum and maximum values when the high ratio is established in said gearing means.

3,842,695

SINGLE LEVER CONTROL

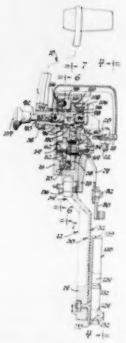
Robert K. Farrington, Shaker Heights, and Louis T. Horvath, Solon, both of Ohio, assignors to Teleflex Incorporated, Cleveland, Ohio

Filed Sept. 4, 1973, Ser. No. 394,359

Int. Cl. F02d

U.S. Cl. 74—876 **16 Claims**

1. A remote control assembly for marine power units comprising; a housing, hollow actuating shaft means rotatably supported by said housing for rotation about a first axis, throttle driving means at least in part supported on said shaft means, transmission driving means at least in part supported on said shaft means, slider shaft means supported within said actuating shaft means for axial movement relative thereto between first and second positions, said slider shaft means being non-rotatable with respect to said housing and having an annular groove extending thereabout, and key means disposed in said groove for movement therein about said slider shaft in response to movement of said actuating shaft means and said



key means being axially shiftable by said slider shaft for engaging said transmission driving means only when said slider shaft means is in said second position, whereby said actuating shaft means moves only said throttle driving means when said slider shaft means is in said first position and moves both of said throttle and transmission driving means when in said second position.

3,842,696

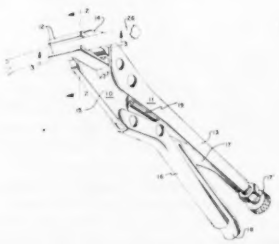
TOOL

Kenneth Wayne, P.O. Box 1191, Orofino, Idaho 83544

Filed Oct. 26, 1973, Ser. No. 409,979

Int. Cl. B25b 7/02

U.S. Cl. 81—425 R **2 Claims**



1. In pliers having means for selectively locking jaws thereof in a predetermined oppressive juxtaposition, a pair of jaw plates for gripping lashing cables mounted perpendicularly in the respective jaws of said pliers, each of said jaw plates comprising: a rigid plate portion, and means for gripping said cable disposed on the interior contacting surfaces of said plate, the interior contacting side of said jaw plates having a relief including, respectively from the leading edge the handles of said pliers, a transversely cut concavely curved recess disposed distally from the leading edge of said jaw plates and having a substantially symmetrical concave arcuate shape, and a transversely cut sloped recess having its deepest portion disposed distally from the rearward edge closest to said plier handles of said jaw plate and having a sloped face from said rearward edge to said deepest portion thereof, and a gradually sloped face from said deepest portion of said sloped recess to the rearward edge of said first recess.

3,842,697

APPARATUS FOR TURNING WORKPIECES

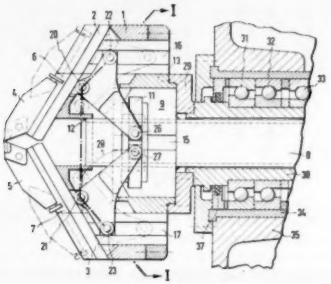
Georg Striegl, Liststrasse 29, Reutlingen, Germany

Filed Mar. 1, 1973, Ser. No. 336,905

Claims priority, application Germany, Mar. 11, 1972, 2211900

Int. Cl. B23b *5/12*

U.S. Cl. 82—2 E **7 Claims**



1. In an apparatus for turning workpieces by means of tools secured to tool slides movably supported in a tool carrier head at an angle relative to the rotational axis of the tool carrier head, said tool slides being arranged opposite each other, and wherein a feed advance tube for said tool slides reaches into said tool carrier head, the improvement comprising intermediate connecting means, guide means for movably locating the intermediate connecting means between said tool slides and the feed advance tube, and linking means operatively interposed between said slide means, said guide means, said feed advance tube and said intermediate connecting means for transmitting equal displacements from said feed advance tube to all tool slides, wherein said linking means between the intermediate connecting means and the guide means comprise studs extending from said intermediate connecting means, and guide blocks or rollers on said studs, said guide means comprising guide grooves in said tool carrier head extending in parallel to said rotational axis of said tool carrier head, said guide blocks or rollers riding in said guide grooves.

3,842,698

SLICING MACHINE FOR SLICING A FOOD PRODUCT OR THE LIKE

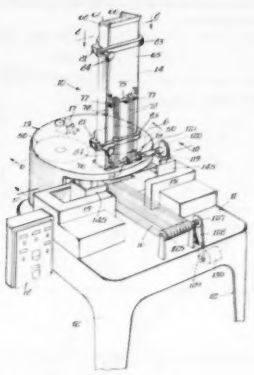
Clifford E. Fitch, 279 Homewood Ct., and Clifford E. Fitch, Jr., 38 W. 23rd St., both of Chicago Heights, Ill. 60411

Filed Sept. 11, 1973, Ser. No. 396,293

Int. Cl. B26d *4/24, 7/06*

U.S. Cl. 83—88 **21 Claims**

1. A slicing machine for slicing a food product or the like comprising, a carriage rotatably mounted for rotation in a substantially horizontal plane about a substantially vertical central axis, a plurality of circular knives rotatably carried by the carriage eccentrically of said central axis and arranged in a substantially horizontal plane above the carriage and gyrated about said central axis upon rotation of said carriage, means for rotating said carriage for gyrating said knives about said central axis, means for rotating said knives so that they may be rotated about their axes as they are gyrated about said central axis by rotation of said carriage, a feed chute for the food product or the like arranged substantially vertically above the plane of said knives and eccentrically of said central axis in alignment with the path of gyration of said knives, feeding means including means in said feed chute for positively suspending the food product or the like in said feed chute and for incrementally lowering the food product or the like each time that a slice is sliced from the food product or the like by the rotating and gyrating knives, and slice collecting means below the plane of said knives in substantial alignment with said feed chute for receiving and collecting slices of



the food product or the like as they are sliced by the rotating and gyrating knives.

3,842,699

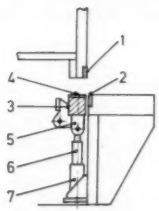
SHEARING MACHINES

Josias Van Zyl, Northcliff, South Africa, assignor to Intermenua (Proprietary) Limited, Johannesburg, South Africa

Filed July 31, 1972, Ser. No. 276,739

Int. Cl. B26d *1/08*

U.S. Cl. 83—157 **7 Claims**



1. A shearing machine comprising a displaceable supporting table, and at least one cooperating piston and cylinder adapted to operate between the supporting table and a frame of the machine to resist displacement of the table, the arrangement being one in which displacement of the supporting table during operation of the machine is adapted to take place against a constant pressure applied in the cylinder.

3,842,700

MITER DEVICE

Edward P. Novak, 911 Shenk Ave., Erie, Pa. 16505

Filed Oct. 17, 1973, Ser. No. 407,209

Int. Cl. B27b *9/04, 5/20*

U.S. Cl. 83—743 **7 Claims**

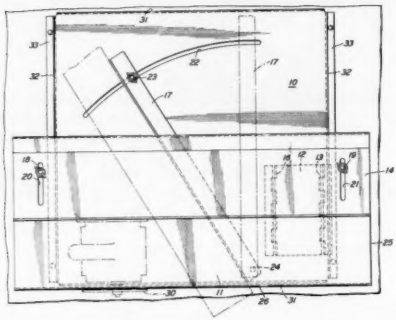
1. A miter device for use with an electric saw comprising, an upper platelike member,

a bottom platelike member,

link means connecting said upper platelike member to said bottom platelike member whereby said upper platelike member can swing upward into a generally perpendicular position relative to the said bottom platelike member and

can further move into a plane generally parallel to said bottom platelike member,

and fence means on said bottom platelike member adapted to hold a board in selected angular relation to said upper platelike member,



and a saw guide adjustably supported on said upper platelike member for guiding a saw for cutting a board supported between said platelike members.

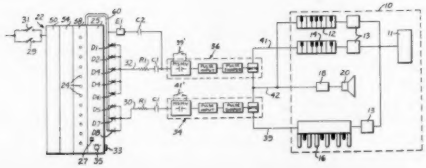
3,842,701
ELECTRONIC ORGAN WITH RHYTHM ATTACHMENT EMPLOYING SELECTIVE OPERATION OF CONVENTIONAL OR RHYTHMIC SOUNDS

John W. Robinson, Jasper, and Arthur W. Ross, Ferdinand, both of Ill., assignors to Jasper Electronics Manufacturing Company, Jasper, Ind.

Continuation of Ser. No. 121,727, March 8, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,394

Int. Cl. G10h *1/00, 5/00*

U.S. Cl. 84—1.03 **10 Claims**



1. The method of operating an electronic organ having solo and accompaniment manuals and a pedal clavier and an electroacoustic system supplied thereby which comprises; connecting a respective gate having a voltage sensitive control terminal between the output side of each of said accompaniment manual and pedal clavier and said electro-acoustic system, supplying steady state gate opening voltage to the control terminal of each said gate for conventional organ playing and during which organ sounds are produced continuously while corresponding keys of the accompaniment manual and pedal clavier are depressed, and selectively interrupting said steady state opening voltage supply and instead supplying respective trains of pulses of gate opening voltage to the respective control terminals of said gates according to selected predetermined repeated and respective rhythm patterns for playing of the organ with depressing of keys of the accompaniment manual and pedal clavier producing sounds which are intermittent in conformity with the patterns of pulses supplied to the control terminals of the respective gates.

3,842,702
ELECTRONIC MUSICAL INSTRUMENT WITH VARIABLE FREQUENCY DIVISION

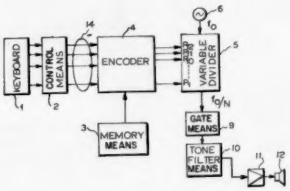
Masahiko Tsundoo, Osaka-fu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 1, 1973, Ser. No. 366,020

Claims priority, application Japan, June 3, 1972, 47-55303

Int. Cl. G10h *5/06*

U.S. Cl. 84—1.01 **7 Claims**



1. An electronic musical instrument with variable frequency division, comprising:

a high frequency generator for generating high frequency pulse signal;

a variable divider coupled to said generator for dividing the frequency of said high frequency pulse signal generated by said generator by one of a plurality integral number factors according to one of a plurality of logic code subsets containing a plurality of bits applied to program terminals thereof, said logic code subsets corresponding to said number factors for producing tone signals corresponding to tones of a musical scale;

an encoder coupled to said variable divider for generating said logic code and supplying a logic code subset to the program terminals of said variable divider;

control means coupled to said encoder for supplying to said encoder an input musical-scale-control signal for causing said encloder to generate a logic code subset corresponding to the control signal; and

a memory means coupled to said encoder for memorizing the logic code subset which is supplied to said program terminals of said variable divider so as to cause said variable divider to continue to produce a tone signal in response to said musical-scale-control signal, even after said musical-scale-control signal ceases and until a succeeding musical-scale-control signal is supplied.

3,842,703
EXPRESSION CONTROL OF ELECTRONIC MUSICAL INSTRUMENT

Shimaji Okamoto, and Isutomu Ishii, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Dec. 4, 1972, Ser. No. 300,591

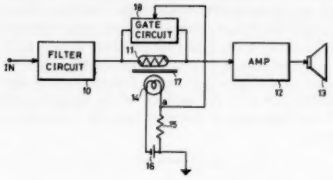
Claims priority, application Japan, Oct. 26, 1971, 46-99745; Oct. 26, 1971, 46-99746; Oct. 26, 1971, 46-99747

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.27 **10 Claims**

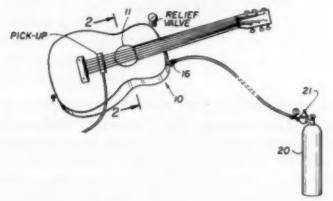
1. An expression control circuit for an electronic musical instrument comprising a light-sensitive variable resistor for regulating the level of an electrical signal passing therethrough, a light source positioned so as to be directed onto said light-sensitive variable resistor and kept lit up during operation of the electronic musical instrument, at least one other light source also positioned so as to be directed onto said light-sensitive variable resistor and kept unlit during normal operation of the first mentioned light source, means for varying the intensity of light incident on said light-sensitive vari-

able resistor from the first mentioned light source to correspondingly vary the resistance by said light-sensitive variable resistor to the passage therethrough of said electrical signal, said means being also capable of varying the intensity of light incident on said light-sensitive variable resistor from the sec-



ond mentioned light source when the same is lit up, a detection means coupled to said first mentioned light source for detecting failure of said first mentioned light source and switching means for lighting up the second mentioned light source upon failure of the first mentioned light source.

3,842,704
GAS CHAMBERED MUSICAL INSTRUMENT
Robert Joson Prochilo, 100 Davison Ave., Lynbrook, N.Y. 11563
Filed Oct. 9, 1973, Ser. No. 404,714
Int. Cl. G10d *1/08*
U.S. Cl. 84—267 **6 Claims**



1. In a musical instrument having strings and an apertured resonant chamber the improvement comprising adding to said chamber in substitute relationship a plastic container for retaining gas and adapted to engage the resonant chamber wall surfaces in continous laminated relationship.

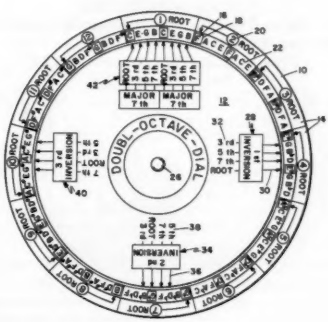
3,842,705
STRINGED INSTRUMENTS WITH IMPROVED STRINGS DUE TO IRRADIATION AND PROCESS FOR PRODUCING THE SAME
Dudley H. Woodard, 1801 E. 12th St., Cleveland, Ohio 44114, and Dudley G. Woodard, 9900 Georgia Ave., Silver Spring, Md. 20902
Filed Mar. 15, 1973, Ser. No. 341,666
Int. Cl. G10d *3/00*; **B01j** *1/10*
U.S. Cl. 84—297 S **14 Claims**

1. A stringed musical instrument comprising
a support; and
nylon strings attached to said support, said strings exhibiting superior brilliance and true fretting for a long interval of playing time, said strings having been exposed to high intensity ionizing irradiation to achieve said superior brilliance and true fretting for long intervals of playing time, the total dose of absorbed radiation varying from about 0.01 to about 100 megarads.

3,842,706
MUTE HAVING MEANS FOR ELIMINATING UNRESPONSIVE NOTES IN BRASS INSTRUMENTS
Samuel Thomas Beversdorf, Rt. 12 Cedarcrest, Bloomington, Ind. 47401
Filed Feb. 27, 1974, Ser. No. 446,159
Int. Cl. G10d *9/06*
U.S. Cl. 84—400 **5 Claims**

1. A mute for a brass musical instrument comprising:
a tapering, hollow, tubular body being closed at the large end and open at the small end;
spacer means fixed to the exterior of said body adjacent said small end for frictionally securing said body to the bell of said instrument when said mute is inserted therein, said spacer means forming a plurality of wind passages defined by said bell, said body, and said spacer means; and
sound absorbing means affixed to the exterior of said body adjacent one end of each of said wind passages.

3,842,707
CHORD INVERSION FINDER
Verna M. Leonard, 8701 Highway 41, Fresno, Calif. 93721
Filed Feb. 22, 1974, Ser. No. 444,893
Int. Cl. G09b *15/02*
U.S. Cl. 84—474 **5 Claims**



1. A chord inversion finder, comprising:
a first dial having a plurality of spaced segments adjacent to the periphery thereof;
each of said segments having a display of indicia therein indicating tone names in regular diatonic chord sequence for a particular key signature, and this sequence repeated

within the same segment to include the same sequence in the next octave;

a second dial mounted on the first dial coaxially therewith and manually rotatable relative thereto;

said second dial having a diameter smaller than the first dial to expose said indicia; and

said second dial having at least one array thereon selectively shiftable into registration with one of the segments on the first dial;

said array having positional indicators to point out the tone in said one segment of an inversion of said diatonic chord, said positional indicators being labeled with the root and degrees of the chord tones in the sequence of the particular inversion.

3,842,708

KEYBOARD FINGERING GUIDE

Verna M. Leonard, 8701 Hwy. 41, Fresno, Calif. 93721

Filed Feb. 22, 1974, Ser. No. 444,892

Int. Cl. G10b *15/00*

U.S. Cl. 84—485 **3 Claims**

1. A keyboard fingering guide, comprising:

a base having an upright rear panel and an upright front panel;

said panels defining therebetween a pocket with an open top;

a disc mounted on said base for rotative adjustment with a lower portion of the disc within said pocket and behind said front panel;

said disc having in peripherally arranged segments, a plurality of arrays of indicia naming scale tones in a like number of key signatures;

said rear panel having a portion extending radially outwardly from said disc and having numerals of a fingering sequence individually juxtaposable with the scale tone naming indicia in a selected single key signature on said disc;

said front panel having an array of interval indicators spaced therealong substantially according to diatonic scale intervals and the spacing of the keys on a piano keyboard; and

a plurality of scale tone naming strips mounted on said base and capable of being exposed one at a time alone with said indicators on the front of said front panel, each strip having thereon the names of the scale tones in one of said key signatures.

3,842,709

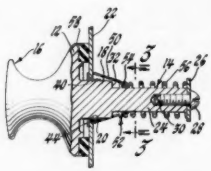
PUSH-IN FASTENER

Lloyd T. Fuqua, Fortville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1973, Ser. No. 389,721

Int. Cl. F16b *13/08*

U.S. Cl. 85—5 R **5 Claims**



1. A push-in fastener adapted for insertion through an aperture in a support panel to secure a component thereto, said fastener including a fastener body having a head portion and a stud extending therefrom, said stud having a first portion adjacent to said head portion of a diameter to be slidably received in the aperture of the support panel and a second portion of a reduced diameter with a radial extending flange at its free end, an expander having a flanged tubular body portion slidably encircling said second portion of said stud and having flexible fingers extending axially therefrom toward said first portion and normally extending radially outward therefrom, a coil spring encircling said second portion with one end of said spring abutting against said radial extending flange and its other end abutting against said flanged tubular body portion of said expander and, a flanged retainer ring having a hub portion slidable axially on said first portion of said stud and positioned to releasably encircle and retain said flexible fingers in a radial inward position and a flange portion adapted to be in interference with the surface of the support panel as said stud of said fasteners is inserted into the aperture in the support panel.

3,842,710

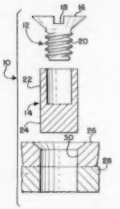
REMOVABLE RIVET

Ouglјesa Jules Poupitch, La Jolla, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 179,378, Sept. 10, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 401,007

Int. Cl. F16b *19/04*

U.S. Cl. 85—37 **9 Claims**



1. A preassembled removable rivet unit comprising a first bolt-like element including a radially enlarged head portion at one end thereof and a threaded shank portion at the other end thereof, a second element comprising a deformable sleeve member including a blind bore of a length at least as great as that of the threaded portion of the shank, the sleeve member telescopically retained in threaded association with the threaded shank portion of the bolt, a solid extremity of the sleeve opposite the bore being of substantial length and extending axially beyond the terminal portion of the bolt element to enable said extremity to be formed into a rivet head by upsetting, the sleeve member having a substantially uniform diameter throughout its axial extent, said uniform diameter being less than the diameter of the enlarged head portion.

3,842,711

ARMING DEVICE FOR ROCKET TYPE PROJECTILE LAUNCHING TUBE

Gaston Jean Olivier Bodinaux, Angleur, Belgium, assignor to Les Forges de Zeebrugge S.A., Herstal-lez-Liege, Belgium

Filed Sept. 15, 1972, Ser. No. 289,365

Claims priority, application Belgium, Sept. 16, 1971, 772649

Int. Cl. F41f *3/04*

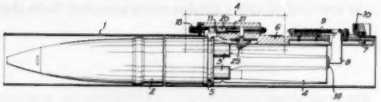
U.S. Cl. 89—1.807 **4 Claims**

1. In an arming device for a rocket launcher including a launch tube having an aperture feature in the tube wall, a rocket withholding-release means, and a rocket firing means spaced axially rearwardly on the launch tube with respect to said rocket withholding-release means; the improvement comprising

a. a unitary support means for the rocket withholding-release means and the rocket firing means, said support

means being removably secured to said launch tube in the area of the said aperture feature in the launch tube, said rocket withholding-release means and said firing means extending radially into the launch tube through the said aperture feature;

b. said rocket withholding-release means comprising a multi-lobed catch element pivotally mounted on said unitary support means for rotation about a central axis outside the rocket launch tube and radially extending into said tube for positively engaging a rocket to be launched when said catch means is rotated in a first rocket securing direction, said catch means having a first lobe for positively engaging a rocket to be launched in said tube, and a second lobe;



c. a releasable catch retaining means comprising a rigid finger element movably mounted on said unitary support means and means normally resiliently biasing said finger element in an extended position towards the catch means and engageable in a positive manner with said second lobe for preventing rotation of said catch means in a second reverse rocket release direction; and

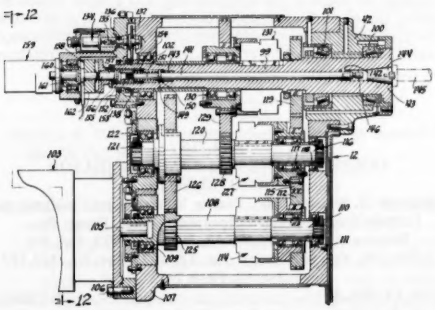
d. a rocket thrust gas pressure responsive actuator element supported by said unitary support member and extending radially into said launch tube, said actuator element being subject to rocket thrust gas pressure and operably connected to said finger element for causing retraction thereof away from engagement with said catch means for thereby releasing said catch means for rotation in a rocket releasing direction upon firing of the rocket by said firing means.

3,842,712

MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MEANS

Dale J. Bondie, Fowlerville; Robert S. Sutton, Franklin, and James D. Lewelling, Birmingham, all of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Division of Ser. No. 166,886, July 28, 1971, Pat. No. 3,789,500. This application Apr. 11, 1973, Ser. No. 350,291
Int. Cl. B23c 5/26
U.S. Cl. 90—11 D **1 Claim**



1. In a machine tool, the combination comprising:

a. a machine base;

b. a pair of laterally spaced columns mounted on said base;

c. a tool spindle assembly including:

1. a rotatable, horizontally disposed tool spindle movably mounted on vertical ways on said columns;

a. said tool spindle is a tubular spindle in which is rotatively mounted a draw bar provided with a draw bolt on its front end for clamping a tool in the spindle;

2. an orbit fluid motor for rotating said draw bar;

3. a splined coupling means for connecting the orbit fluid motor to said draw bar;

4. an electric clutch operatively connecting said orbit fluid motor to said splined coupling means;

5. a spring means for normally biasing said draw bar forwardly toward an operative engagement with a tool holder mounted in said tool spindle;

6. said spindle assembly further includes a pressure operated switch means operatively connected to said orbit fluid motor for de-energizing said electric clutch when the fluid pressure in said motor rises to a predetermined level when the draw bar is rotated for clamping a tool holder in the tool spindle;

7. a gear drive means operatively connected to said tool spindle;

8. a drive motor operatively connected to said gear drive means;

9. a spindle position sensing means operatively connected to said tool spindle; and

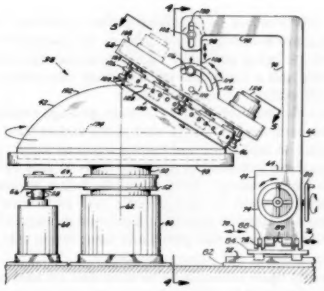
d. power drive means operatively connected to said spindle assembly for moving said spindle assembly along said vertical ways, said gear drive means, drive motor and spindle position sensing means being movable as a unit.

3,842,713

ASPHERIC LENS GENERATOR

Vern E. Hamilton, Palos Verdes Estates, and Eugene K. Thorburn, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed June 4, 1973, Ser. No. 366,843
Int. Cl. B23c 3/04, 5/12
U.S. Cl. 90—11 C **10 Claims**

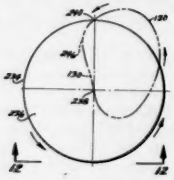


1. A method of generating an aspheric surface of revolution with a line cutting element operating on a blank that is normally supported horizontally and rotated about a vertical axis, which comprises the steps of:

driving said cutting element so that its cutting edge is moved along a noncircular locus including at least a predetermined noncircular portion which is maintained in a plane that intersects with said blank and is angularly adjustable with respect to horizontal; and

adjusting said plane to a selected angle with respect to horizontal so that said cutting edge cuts said blank along

at least a part of said predetermined noncircular locus portion which is maintained in said plane whereby said



aspheric surface of revolution can be generated on said blank with rotation thereof about said vertical axis.

3,842,714

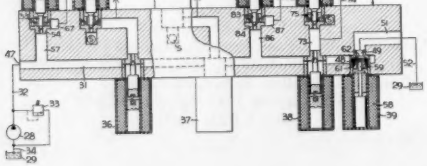
COMBINE HYDRAULIC VALVE

Martin W. Coleman, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 22, 1973, Ser. No. 325,957

Int. Cl. F15b *13/044*

U.S. Cl. 91—459 **2 Claims**



1. In combination in a self-propelled combine harvester having a control console positioned at an operator's station, said combine being provided with a hydraulic system including a pump and a sump, the improvement comprising:

a double acting hydraulic cylinder,

a hydraulic manifold having a main passage connected in fluid receiving relation to said pump and in fluid delivery relation to said sump and having a pair of supply passages operatively connecting opposite ends of said cylinder to said main passage, said manifold being positioned in remote relation to said console and proximate to said pump and sump to provide a minimum passage of hydraulic fluid between said pump and sump when said hydraulic cylinder is not being operated,

a normally open solenoid valve mounted on said manifold and connected to said main passage, said normally open solenoid valve having an open position permitting hydraulic fluid to pass from said main passage to said sump and a closed position blocking fluid from flowing from said main passage to said sump,

a first pair of normally closed solenoid valves mounted on said manifold and connected respectively in controlling relation to said supply passages, said first pair of normally closed solenoid valves opening when energized to permit fluid flow in said supply passages, respectively, between said main passage to said cylinder, said first pair of normally closed solenoid valves being operative when not energized to prevent flow of fluid through said supply passages from said cylinder to said main passage,

a second pair of normally closed solenoid valves connected respectively to said supply passages and operable to control flow of fluid therefrom to said sump, said second pair of normally closed solenoid valves when opened being operative to pass fluid from said cylinder to said sump without it passing through said main passage, and

a plurality of switches positioned in said control console for controlling said solenoid valves and so connected to the latter whereby upon closing of selected switches on said console said normally open solenoid valve will be closed permitting buildup of hydraulic pressure in said main passage and upon subsequently opening one of said first pair of normally closed solenoid valves associated with one of said supply passages and opening the one of said second pair of normally closed solenoid valves associated with the other of said supply passages, fluid is delivered to one end of said cylinder and exhausted from the other.

3,842,715

PISTON FOR INTERNAL COMBUSTION ENGINES

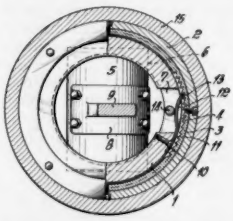
Rudolf Maier, Aufhausen, Germany, assignor to Mahle GmbH, Stuttgart, Germany

Filed Jan. 2, 1973, Ser. No. 320,620

Claims priority, application Germany, Jan. 12, 1972, 2201299

Int. Cl. F01b *3/00*

U.S. Cl. 92—31 **6 Claims**



1. In an internal combustion engine a piston including a seat, a piston pin mounted in the seat, a piston skirt mounted on said seat and means interconnecting the piston seat and skirt for providing progressive rotation between said piston seat and skirt about the longitudinal axis of the piston, the provision of a stepping ring with internal teeth affixed relative to the internal surface of the piston skirt, a curved leaf-type spring having one end affixed to the seat while the other end engages the teeth of the stepping ring, and control means by which the curved leaf-type spring is deflected in a direction corresponding to the straightening of the spring in accordance with the operating cycle of the engine to effect said rotation of the piston skirt.

3,842,716

DOUBLE DIAPHRAGM BRAKE OPERATOR IMPROVEMENTS

Kenneth D. Swander, Jr., Prairie Village, Kans., assignor to Certain-Teed Products Corporation, Valley Forge, Pa.

Division of Ser. No. 148,942, June 14, 1971, Pat. No. 3,730,056. This application Jan. 12, 1973, Ser. No. 323,197

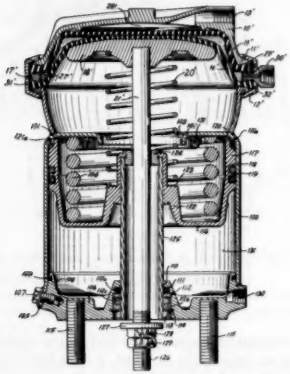
Int. Cl. F01b *7/00*

U.S. Cl. 92—63 **5 Claims**

1. A brake actuating device having operable connection with the braking mechanism of a vehicle, comprising,

a closed housing divided into inner and outer compartments,

a pair of flexible diaphragms peripherally secured in the outer compartment,
a first pressurized fluid input between the outboard one of said diaphragms and the outboard end of the outer compartment,
a first spacing ring between said diaphragms,
a second pressurized fluid input between said two diaphragms through the spacing ring therebetween,
a brake operating rod surmounted by a diaphragm abutment plate extending axially through the inner and outer compartments and having attachement to the braking mechanism,
a movable wall mounted within the inner compartment equipped with a tubular axial extension surrounding and having abutting engagement at its inner end with said rod, an annular member forming the partition between the inner and outer compartments,



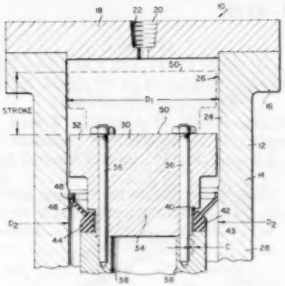
a power compression spring unit between the said annular member and movable wall,
a rod return compression spring between the diaphragm abutment plate and movable wall,
an air inlet for introducing compressed air to the inner compartment between the movable wall and the inner end of the housing wherein the improvement comprises a diaphragm retaining ring encircling the peripheries of said diaphragms and first ring spacing same,
the width of said retaining ring at least equal to the combined thickness of the two diaphragms, in clamped state, with the first spacing ring clamped therebetween, and said retaining ring positioned inward of a clamp band circumferentially gripping all of said diaphragms, said first spacing ring and said retaining ring therewithin.

3,842,717
PISTON SEAL

Norman F. Prescott, Wenham, Mass., assignor to Atwood & Morrill Co., Salem, Mass.

Filed June 21, 1973, Ser. No. 372,381
Int. Cl. F01b *31/00;* **F16j** *9/00*
U.S. Cl. 92—162 R **5 Claims**

1. In combination a piston and cylinder comprising;
a cylinder having a cylinder head and a cylinder wall, said cylinder wall having a first cylindrical portion, said first portion being of a first inside diameter over its entire length and an axially disposed second cylindrical portion, said second portion being of a second inside diameter over its entire length, said second inside diameter being less than said first inside diameter, a piston, a groove encircling said piston, a seal ring mounted in said groove, said seal ring having an inside diameter greater than the inside diameter of said groove, a sealing surface at the outer periphery of said seal ring, said sealing surface having an outside diameter less than that of said first inside diameter but substantially equal to said second inside diameter, whereby when said piston moves axially

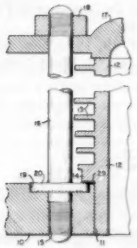


in said cylinder away from said cylinder head portion, said sealing surface does not engage with said cylinder wall while said sealing surface is adjacent to said first portion but may move laterally slightly to completely engage against said second portion of said cylinder wall as said sealing surface slides over said second portion to thereby provide a seal.

3,842,718
BOLTED CONNECTION INCLUDING A STUD

William A. Malchow, 1385 N. Castle Rd., Sonoma, Calif. 95476

Filed Apr. 12, 1973, Ser. No. 350,334
Int. Cl. F16g *11/04*
U.S. Cl. 92—171 **6 Claims**

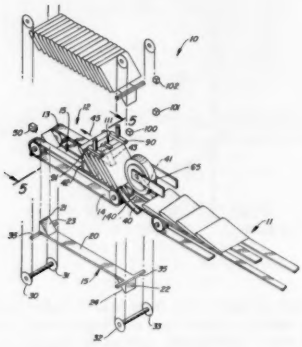


1. A connection between a base and a clamped member which comprises:
a. a base having an internally threaded hole and a counterbore,
b. a stud having at its inner end a stem threadedly engaged to the base within the hole, an integral flange situated principally within the counterbore and having a thickness in excess of the depth of the counterbore whereby the outer surface of said stud flange is situated out of said counterbore, and
c. a clamped member in abutment with said base overlying said stud flange at least in part, said clamped member being urged toward the base and said stud flange by means connected to the outer end of the stud.

3,842,719
METHOD AND APPARATUS FOR FORMING A DENSE SHINGLED ARRAY OF SIGNATURES

Victoriano Fernandez-Rana, Easton; Paul R. Simon, Allentown, and James E. Peserik, Lansdale, all of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 7, 1973, Ser. No. 358,124
Int. Cl. B31b *1/96*
U.S. Cl. 93—93 M 33 Claims

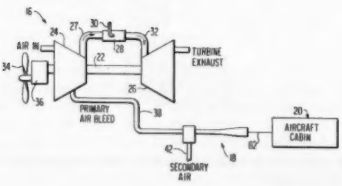


1. Apparatus for providing a dense shingled array of signatures on a tray with the signatures inclined relative to the surface of the tray on which they are supported, said apparatus comprising means for supporting a tray at a dense shingling location, conveyor means for delivering signatures in a loose shingled stream to said dense shingling location, means at the dense shingling location for forming the dense shingled array and for locating same on the tray, and means for removing said tray from said dense shingling location with said shingled array of signatures thereon.

3,842,720
JET PUMP FOR AIRCRAFT CABIN PRESSURIZATION SYSTEM

Lewis Herr, Mill Hall, Pa., assignor to Piper Aircraft Corporation, Lock Haven, Pa.

Filed Mar. 29, 1973, Ser. No. 346,218
Int. Cl. B64d *13/04*
U.S. Cl. 98—1.5 9 Claims

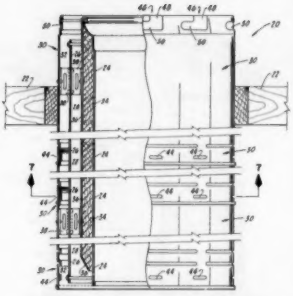


1. A pressurization system for an aircraft comprising the combination of an engine including a source of air under pressure, a jet pump for pressurizing the cabin in the aircraft, said jet pump including a primary nozzle in communication with the air under pressure from the engine, a secondary nozzle in communication with ambient air, a tube in communication with said nozzles on the downstream side thereof for receiving and mixing the air issuing from said nozzles, a divergent section at the opposite end of said mixing tube for receiving the mixed air from said nozzles and communicating it to the aircraft cabin, said mixing tube having a length to width ratio within a range of about 8 to 14, said jet pump being effective per se to provide an acceptable air flow rate for pressurizing the cabin throughout the full altitude range of the aircraft.

3,842,721
COMBINATION INSULATED FLUE AND THERMOSYPHON CHIMNEY

George H. Cardiff, Santa Cruz, Calif., assignor to Metal Fab Inc., Wichita, Kans.

Filed June 25, 1973, Ser. No. 373,000
Int. Cl. E04h *12/28*
U.S. Cl. 98—60 3 Claims



1. A combination insulated flue and thermosyphon chimney comprising an inner flue conduit, a first liner member surrounding said conduit forming an air inner annulus therebetween, a second liner member surrounding said first liner member to form an air outer annulus between said first and said second liner and means for insulating said inner flue conduit from said air inner annulus, a shell member attached to said inner conduit and enclosing said means for insulating and separating said air inner annulus therefrom, means for attaching said first liner to said shell member, means for attaching said second liner to said first liner, said inner flue conduit being essentially cylindrical and said insulating means substantially covering the circumferential exterior surface of said inner conduit, said first liner being substantially cylindrical and concentrically positioned with respect to said inner conduit and said first liner generally traversing the entire length of said inner conduit, said second liner being essentially concentrically positioned with respect to said inner flue conduit and including a plurality of cylindrical members, each cylindrical member including a structure defining a plurality of elongated generally rectangular protrusions positioned on the internal circumferential area thereof and in proximity to one end and a plurality of channels positioned on the exterior surface thereof at the opposite end, said channels including a top whose width is essentially the length of said rectangular protrusions and a base whose width is essentially that of said protrusions, said rectangular protrusions and said channels enabling each of said cylindrical members to lock with each other when said rectangular protrusions of one cylindrical member is inserted into said tops of said channels of another cylindrical member and twisted when said protrusions are aligned with said base to lodge and lock said rectangular protrusions of one of said cylindrical member into said base of said channels of another cylindrical member, said channels delineating essentially L-shaped protrusions situated on the interior surface of each of said cylindrical members, said first liner being shorter than said second liner enabling said air outer annulus to be in communication with said air inner

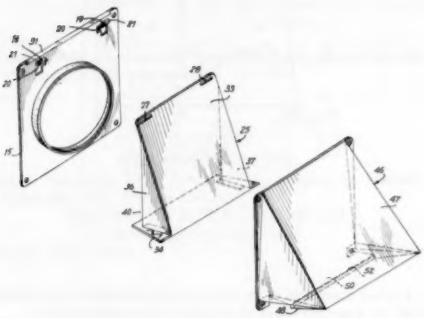
annulus, at least one end of said shell member being attached to said inner conduit such as to prevent communication with the outside atmosphere, and a combustible material in direct contact with said second liner.

3,842,722

VENTING APPARATUS

Theodore R. Smith Miller, P.O. Box 394, Bedford, N.Y. 10506

Filed July 26, 1973, Ser. No. 382,659
Int. Cl. F23l 17/02
U.S. Cl. 98—119 14 Claims



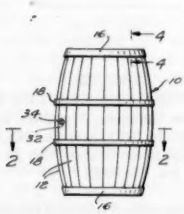
1. Venting apparatus comprising, in combination:
a discharge conduit having an open end;
enclosure means disposed about the open end of the discharge conduit and defining an enclosed space having an opening for discharging fluid; and
shutter means positioned within said enclosed space for movement relative to the enclosure means between an open position and a closed position, the shutter means including a first portion for intercepting the flow of fluid through the discharge conduit and a second portion for blocking said opening when the shutter means is in its closed position, said first portion defining an unobstructed passage for equalizing fluid pressure on opposite sides of the first portion when the shutter means is closed, the second portion of the shutter means unblocking said opening upon movement to said open position to discharge said fluid.

3,842,723

WHISKEY BARREL

Armand R. Boucher, Stamford, Conn., assignor to Joseph E. Seagram & Sons, Inc., New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,995
Int. Cl. B65d 9/04
U.S. Cl. 99—277.1 14 Claims



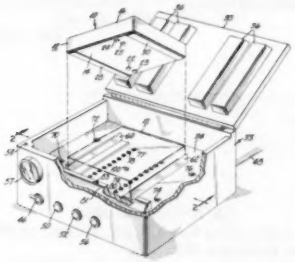
1. In an internally charred wooden barrel including a plurality of staves and heads combined to form a substantially leak-proof container for containing new alcoholic liquor and aging same to a fully aged or truly aged condition through prolonged exposure to repeated heating and cooling cycles, a series of spaced contours formed over at least a portion of the inner surface of said barrel and containing alternating raised and depressed areas whereby to increase the area of the red caramel layer beneath said char and to increase the breathing effectiveness of said barrel for liquid aging purposes.

3,842,724

APPARATUS AND PACKAGE FOR USE IN HEATING OR COOKING OF FOOD BY ELECTRICAL CONDUCTION THROUGH THE FOOD

Abraham L. Korr, 8712 Hickory Dr., Philadelphia, Pa. 19136; James F. Mahoney, 55 Lakeside Dr. N., Kinnelon, N.J. 07405, and Bernard T. Svihel, 7812 Cobden Rd., Laverock, Pa. 19118

Filed Sept. 27, 1972, Ser. No. 292,609
Int. Cl. A23b 1/06; A47j 27/62; F24c 7/08
U.S. Cl. 99—358 7 Claims



1. Apparatus for the heating or cooking of food packaged in a container, comprising:
indicia reading means for producing current-control signals in response to machine-readable indicia on said container representing current-control information characteristic of said packaged food;
means for applying a voltage across said food in said container to pass a current through said food to heat or cook said food; and
means supplied with said current-control signals for automatically varying said current while said heating or cooking is taking place, through values of current determined at least in part by said current-control signals.

3,842,725

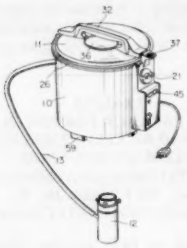
FRYING APPLIANCE

Yoshiaki Sano; Yoshitaka Hirose, and Yasumasa Miki, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Osaka, Japan

Filed Oct. 30, 1972, Ser. No. 301,754
Claims priority, application Japan, Apr. 17, 1972, 47-38839
Int. Cl. A47j ; E24c
U.S. Cl. 99—403 7 Claims

1. A frying appliance comprising: a container for holding frying oil; closure means for fluid-tightly sealing said container; a heating arrangement adjacent the lower portion of said container for applying heat to the frying oil; a fume absorber to vent fumes and odors arising from foodstuff and frying oils during a frying operation comprising a housing member provided with inlet for connection to a water source and outlet open ends in axial alignment with said inlet for admitting a stream of water therethrough, a fume inlet opening on the side wall thereof and means located above said opening in said side wall and extending across said housing

member in the path of said stream of water for producing bubbles in the water in said housing; and vent means providing



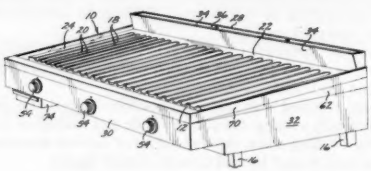
communication between the space inside said container and said fume inlet opening such that said fumes and odors are scrubbed with said water.

3,842,726

GROOVED GRIDDLE

Howard C. Fautz, Long Beach, Calif., assignor to Wolf Range Company, Baltimore, Md.

Filed Aug. 20, 1973, Ser. No. 390,163
Int. Cl. A47j 37/10
U.S. Cl. 99—425 6 Claims



1. A grooved griddle for grilling foods, said griddle comprising:

a non-apertured, thick metal grill plate adapted to overlie a heat source, said plate having a sloping uncovered upper surface to allow vaporized fats to be carried upwardly past food disposed thereon, and which includes a plurality of sloping, generally parallel grooves and intermediate ridges defining a continuous, unapertured cooking area whereby liquified food fats from said food thereon are unable to drop through said plate to said heat source, the move elevated extremities of the sloping said grooves terminating short of the upper edge of said plate to define an edge margin to act as a barrier for said food fats, the depth of said grooves being less than half the thickness of said plate and defining a substantial metal mass below said grooves; and

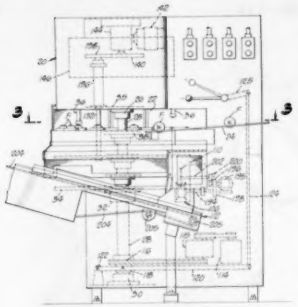
a plurality of heat sensors disposed in close proximity to said metal mass below said grooves for sensing temperature drops across said metal mass.

3,842,727

FRUIT SLICING APPARATUS

John G. Glenn, Cucamonga; Walter Ziegler, Riverside, and Ned C. Carter, Chino, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Dec. 6, 1971, Ser. No. 204,957
Int. Cl. A23n 7/08; A23p 1/00; A47j 17/16
U.S. Cl. 99—592 30 Claims



1. In an apparatus of the character described to cut slices of fruit, for example slices of oranges, the combination of:

an upright cylindrical knife;

a cage below the cylindrical knife to receive a fruit pulp core;

reciprocable plunger means movable downwardly to force the fruit axially onto the cylindrical knife from above to divide the fruit into an outer skin-laden sleeve and an inner axial pulp core having skin-laden opposite ends, and to force the axial pulp core from the interior of the cylindrical knife into the cage;

knife means movable into and out of the cage to cut the axial pulp core into a stack of slices including skin-laden caps at opposite ends of the core and intermediate skin-free fruit slices;

means below the cage to support the axial pulp core before the cutting operation by the knife means and to support the stack of slices after the cutting operation, said support means being movable to permit the fruit slices to drop out of the bottom of the cage;

means to remove each of the opposite skin-laden caps from the stack of slices before the fruit slices drop out of the cage; and

conveyor means under the support means to receive the fruit slices from the cage, said conveyor means travelling transversely of the cage at a rate to cause the slices of the stack to be distributed in a row across the conveyor.

3,842,728

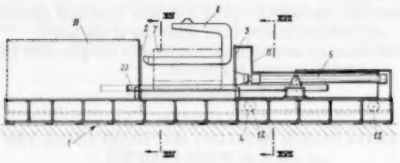
DEVICE FOR TYING COILS OF WIRE

Hubert Elineau, 9 rue Exelmans, Versailles, France

Filed Apr. 6, 1973, Ser. No. 348,617
Claims priority, application France, May 23, 1972, 72.8273
Int. Cl. B65b 13/28
U.S. Cl. 100—7 14 Claims

1. A device for tying coils of wire and comprising means for placing a tie-wire around a coil and means for twisting and knotting said tie-wire, wherein the means for twisting the tie-wire comprise at least one mandrel which is capable of both translational and rotational motion and is provided with

means for receiving the two ends of the tie-wire, and at least one back-plate for holding the tie-wire in position during



rotation of the mandrel, said back-plate being placed opposite to the head of said mandrel.

3,842,729

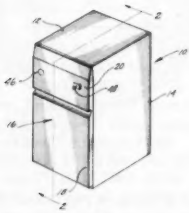
REFUSE COMPACTOR

Jorgen Mandrup, Eagle Rock, Calif., assignor to Matador Industries, Inc., Temple City, Calif.

Filed Aug. 14, 1972, Ser. No. 280,533

Int. Cl. B30b *1/18, 15/14*

U.S. Cl. 100—229 A **5 Claims**



1. An improved refuse compactor comprising:

a. a cabinet;

b. receptacle means in the cabinet for receiving refuse;

c. means for access to the receptacle means for placing refuse therein and for removing compacted refuse therefrom;

d. a ram in the cabinet for compacting refuse having:

i. a compactor head for engaging and compacting refuse in the receptacle means;

ii. first and second sets of parallel and spaced apart pantographic linkages, each of the linkage sets having upper arms and lower arms, the lower arms of the linkage sets carrying the compactor head such that the lower arms of each linkage set can travel towards and away from each other;

iii. means for mounting the upper arms of the linkage sets to the cabinet including first and second trunnions pivotally carrying the upper arms of the first and second sets of pantographic linkages, each of the trunnions having a bore ending in a shoulder on the interior end thereof;

iv. first and second nuts for the first and second trunnions, respectively, each of the nuts being received in the bore of its associated trunnion; and

v. first and second means for mounting the nuts on the respective trunnions for the transmission of a drive force in either direction along the axes of the nuts, for selective removal of the nuts from the trunnions, and to prevent rotation of the nuts, each of the mounting means including a plate removably secured to its associated trunnion and cooperating with the interior shoulder of the bore of such trunnion to keep the nut associated with such trunnion in such bore; and

e. drive means for extending and retracting the pantographic linkage sets and to thereby extend and retract the compactor head into and out of the receptacle means, the drive including first and second oppositely threaded drive screws threadably receiving the first and second nuts such that with rotation of the screws in one direction the nuts travel towards each other to extend the pantographic linkage sets and rotation of the screws in the opposite direction of the screws in the opposite direction the nuts travel away from each other to retract the pantographic linkage sets.

3,842,730

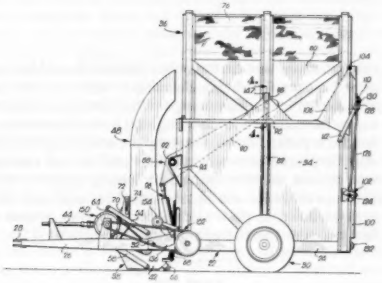
MACHINE FOR LOADING, STACKING AND UNLOADING CROPS

Allen A. White, Peabody; Harold Keith Garrison, Newton, and Dean P. Brooks, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 139,391, May 3, 1971, Pat. No. 3,691,741. This application June 9, 1972, Ser. No. 261,346

Int. Cl. B30b *1/32, 15/06*

U.S. Cl. 100—245 **11 Claims**



1. A stacker including:

a container adapted to receive a crop to be stacked;

a vertically reciprocable press carried by the container for forming the crop in the container in a compact stack;

a U-shaped lift having a pair of arms embracing the press and mounted on the container for swinging movement about a horizontal axis; and

means for each arm respectively coupling the same with the press for reciprocating the latter in response to swinging of said lift;

said coupling means each including a pair of rollers on the press remote from said axis and having the corresponding arm disposed therebetween.

3,842,731

PRESS FOR USE IN BOOKBINDING AND THE LIKE

Clarence L. Anderson, Penfield, N.Y., assignor to Magnamatrix Corporation, Rochester, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,546

Int. Cl. B30b *7/00*

U.S. Cl. 100—264 **3 Claims**

1. Press apparatus comprising:

a. a horizontal base member;

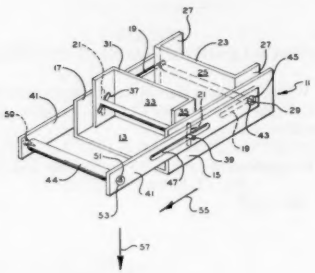
b. a first vertical compression member mounted on said base for extensive bi-directional sliding motion along a first axis;

c. a second vertical compression member parallel to said first member and mounted on said base for limited bi-directional sliding motion along said axis between a first

and a second position, said second member having a slanted camming surface whereby application of a force to the surface along a line normal to the plane of the base plate will cause said second member to move toward said first member;

d. means movable between a first and a second vertical position, said means positioned to contact said camming surface so that downward motion of said means will cause said second member to move toward said first member;

e. means including a handle parallel to said first and second members coupled to said first member so that movement of said last mentioned means along said first



axis will move said first member therewith, said last mentioned means also being slideably coupled to said movable means for motion along said axis but in such a manner as to transmit a force along said line normal when the handle is pushed down, whereby the article to be pressed may be placed between said first and second members, said second member moved to loosely grip the article between said first and second members and said handle pressed down to push said second member toward said first member thereby compressing the article.

3,842,732

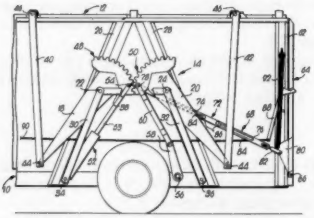
TAILGATE CONTROL FOR STACKERS

John Dale Anderson, Canton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed May 17, 1973, Ser. No. 361,194

Int. Cl. B30b *1/08*

U.S. Cl. 100—270 **18 Claims**



1. A stacker including:

a container adapted to receive a crop to be stacked;

apparatus including a reciprocable compressor associated with the container for periodically compacting the crop into a stack conforming substantially in size and shape with the container,

said container having an open end through which the stack passes during unloading;

a gate movable on said container into and out of closing relationship to said end;

means releasably holding the gate in said closing relationship; and

structure operably coupling said gate with said apparatus and shiftable during each actuation of the latter,

said structure controlling movement of the gate only when said holding means is released.

3,842,733

TWO-COLOUR PRINTING MACHINES USING THE SILK-SCREEN PROCESS

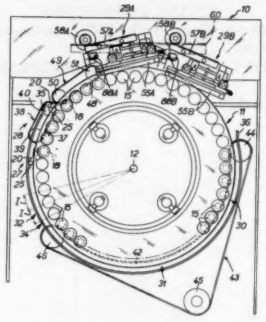
Louis Gilbert Dubuit, 60 Rue Vitruve, 75020 Paris, France

Filed May 21, 1973, Ser. No. 362,327

Claims priority, application France, May 30, 1972, 72.19317; Jan. 11, 1973, 73.00814

Int. Cl. B41f *17/22*

U.S. Cl. 101—38 A **16 Claims**



1. A machine for printing in two colours by the silk-screen process on objects such as tubes, cases, small flasks of synthetic material and the like, comprising, conveying means carrying at uniformly-spaced intervals an odd number of rotatable mandrels each adapted to receive an object to be printed, driving means for effecting a forward step-by-step movement of said conveying means with a step which is an even multiple of said interval, and two printing stations disposed along said conveying means and spaced apart from each other by a distance which is an odd multiple of said interval, each printing station comprising a silk screen movable in translation and a squeegee, where said conveying means comprises a star-plate rotatably mounted about a horizontal axis, said mandrels extending horizontally from said star-plate, and wherein the screens of said printing station are oblique with respect to each other.

3,842,734

PRINTER

Yoshifumi Gomi, Chino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Chuo-ku, Tokyo and Shinshu Seiki Kabushiki Kaisha, Suwa-shi, Natano-ken, both of, Japan

Filed Dec. 29, 1972, Ser. No. 319,438

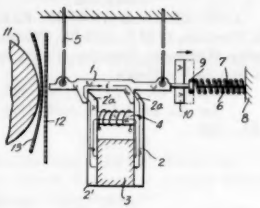
Claims priority, application Japan, Dec. 29, 1971, 46-728; Dec. 29, 1971, 46-729

Int. Cl. B41j *7/08*

U.S. Cl. 101—93.34 **6 Claims**

1. In a printer having a plurality of print columns, each column having print hammers displaceable between a rest and a print position; a deformable elastic body maintained in a deformed condition by the associated print hammer at said rest position; improved magnetic circuit control means for selectively holding the associated hammer at a rest position and releasing same for displacement to a print position includ-

ing a permanent magnet common to at least two of said columns, a first hammer-hold magnetic circuit portion including a portion of the associated print hammer, and a second release magnetic circuit portion associated with each print hammer including release coil means, said first and second magnetic circuit portions being connected in parallel to each other, said parallel connection being connected to said permanent magnet for receiving magnetic flux therefrom,



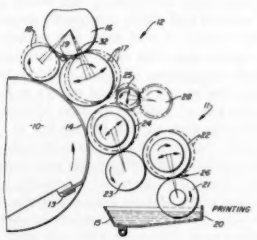
each of said magnetic circuit control means being adapted to hold the associated hammer at said rest position and to release said associated hammer upon the application of a signal to the associated release coil means in a direction so as to decrease the magnetomotive force applied to the associated hammer, the energy stored in the associated deformed elastic body displacing the associated hammer from said rest position to said print position upon said decrease in said magnetomotive force.

3,842,735

LITHOGRAPHIC PRINTING APPARATUS AND WASH-UP DEVICE

Donald L. Southam, Brecksville, and John Marshall Gaffney, Cleveland Heights, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 22, 1972, Ser. No. 317,723
Int. Cl. B41f *7/40, 35/04*
U.S. Cl. 101—145 **2 Claims**



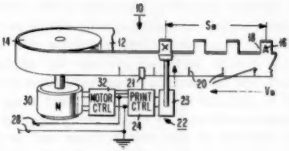
1. A lithographic printing press comprising plate cylinder means for carrying a lithographic printing plate during a printing operation, inker means for transmitting ink from a source of ink to the lithographic printing plate during a printing operation, said inker means including an ink distributing roll and ink form roll means for receiving ink from said ink distributing roll and applying ink to the lithographic printing plate, and dampener means for transmitting dampening solution from a source of dampening solution to the lithographic printing plate during a printing operation, said dampener means including dampener form roll means for applying dampening solution to the lithographic printing plate during a printing operation, distributing roll means for transmitting dampening solution along a flow path from the source of dampening solution to said dampener form roll means and for distributing the dampening solution on the surface of said dampener form roll means, and dampener throw-off means for moving said dampener form roll means between a printing position in which said dampener form roll means is disposed in rolling engagement with the lithographic printing plate and a thrown-off position in which said dampener form roll means is spaced from the lithographic printing plate and in which said dampening solution flow path is interrupted to prevent the transfer of solution from the source of dampening solution to said dampener form roll means and to prevent the transfer of solution from said dampener form roll means to the source of dampening solution, said inker means including inker throw-off means for moving said ink form roll means relative to said plate cylinder means from a printing position to a thrown-off position and from a thrown-off position to a wash-up position, said ink form roll means being disposed in rolling engagement with the lithographic printing plate when said ink form roll means is in the printing position, said ink form roll means being spaced apart from both the lithographic printing plate and said roll means in said dampener means when said ink form roll means is in the thrown-off position to prevent the transfer of ink from said ink form roll means to the lithographic printing plate and to said dampener means, said ink form roll means being disposed in rolling engagement with said ink distributing roll and with at least one of said roll means of said dampener means when said ink form roll means is in said wash-up position and said dampener form roll means is in its thrown-off position, said ink form roll means being operable to effect the transmittal of wash-up solution from said ink distributing roll to said dampener form roll means when said ink form roll means is in its wash-up position, said dampener distributing roll means including a rider roller having a rolling contact engagement with said dampener form roll means when said dampener form roll means is in its printing and thrown-off positions, said rider roller being disposed in rolling contact engagement with said ink form roll means when said ink form roll means is in said wash-up position and said dampener form roll means is in its thrown-off position, and means for driving said rider roller independently of the surfaces of said ink form roll means and said dampener form roll means, said rider roller having a peripheral surface which when said dampener form roll means is in its thrown-off position and when said ink form roll means is located in its thrown-off position provides driving force to the surface of said dampener form roll means independently of other roll means of said inker and dampener means.

3,842,736

PRINT HAMMER REGISTRATION CONTROL

Richard Lyman Gilbert, Endicott; Michael David Hryck, Endwell, and John Mako, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,133
Int. Cl. B41j *5/22*
U.S. Cl. 101—93.34 **5 Claims**



1. In printing apparatus having a type carrier with a plurality of type characters thereon movable to present said type characters to different print positions along a print line of a document and having electromagnetically operated print hammer means disposed to be energized from a source of electrical

energy for impacting the document and selected ones of said type characters to print on said document, said electromagnetically operated print hammers having a flight time which varies with the voltage of said source;

the improvement which comprises connecting a pulse operated motor whose speed varies with the frequency of the applied pulses to drive said type carrier, and

connecting a voltage responsive variable frequency device whose frequency varies with the applied voltage to be energized from said source to generate pulses and connecting said device to said motor to thereby vary the speed of said motor for driving said motor, whereby changes in the flight time of said electromagnetically operated print hammer means with variations in source voltage are compensated for by corresponding changes in the speed of said type carrier so as to maintain proper registration under varying source voltage conditions between said print hammer means and type characters when impacting said document and selected type characters to print.

3,842,737

PRINTER

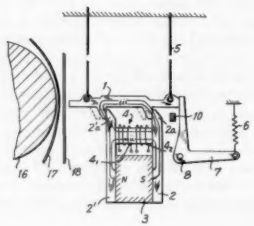
Yoshifumi Gomi, Chino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha and Shinshy Seiki Kabushiki Kaisha, Nagano-ken, Japan

Filed Feb. 23, 1973, Ser. No. 335,198

Claims priority, application Japan, Feb. 24, 1972, 47-19234; Mar. 30, 1972, 47-32071

Int. Cl. B41j *7/08*

U.S. Cl. 101—93.34 **4 Claims**



1. In a printer having respective control means for print hammers which are arranged in a plurality of columns and each of which is displaceable between a rest position and a print position, and having respective deformable elastic bodies maintained in deformed condition by the associated print hammers in the rest position, improved magnetic circuit control means associated with each of said columns for holding each said print hammer at said rest position and selectively releasing said print hammers for displacement to said print position, a permanent magnet common to each of the columns, a first hammer hold magnetic circuit portion associated with each hammer including a portion of the associated print hammer and a second release magnetic circuit portion associated with each hammer including release coil means, said release coil means including means for applying signals thereto, said first and second magnetic circuit portions being connected in parallel with said permanent magnet, each of said magnetic circuit control means being adapted to hold said respective hammer at said rest position and to release said respective hammer upon application of a signal to its release coil means by said signal applying means in a direction so as to decrease the magnetomotive force applied to said hammer, the energy stored in the respective deformed body displacing said respective hammer from said rest position to said print position upon said decrease in said magnetomotive force, said release coil having applied thereto a further signal by said signal applying means when said associated hammer is displaced from its rest position and at least one other hammer associated with said common permanent magnet is to be released from its respective rest position so that the operating point of said common permanent magnet is substantially returned to the original operating point before said at least one other print hammer is released from a rest position.

3,842,738

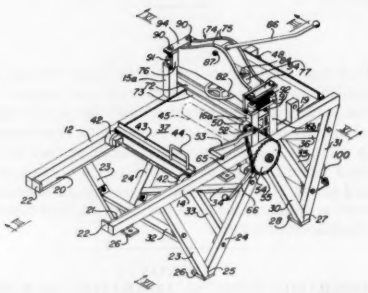
CONVERTIBLE GRAPHIC PRESS

Ronaldo M. Terrazas, 1745 E. 14th St., Oakland, Calif. 94606, and Stanley Washburn, Berkeley, Calif., assignors to said Terrazas by said Washburn

Filed Aug. 17, 1973, Ser. No. 389,123

Int. Cl. B41f *3/30, 3/36, 1/06*

U.S. Cl. 101—146 **3 Claims**



1. In an interchangable graphic press set up for lithography, a pair of unitary complimentary side members having in coplanar arrangement V-shaped front and rear legs, horizontal side rails with inturned track flanges and parallel upstanding hollow posts two on each side member open at the top and extending above and below said side rails, cross bracing between said side rails determining the width of said press, a solid roller with its end shafts removably mounted in suitable bearings transversely of said press and between said posts at either side below said side rails with the perimeter of said roller in level engagement with the undersurface of a bed, a bed for said press having attached rollers at its outer end for horizontal movement guided by said inturned flanges and resting at its inner end on said solid roller in the preliminary position, a yoke assembly transversely mounted at either side between the parallel upstanding posts and resiliently mounted with spacers, said yoke having an internally mounted eccentric for exerting great vertical pressure in small increments, a scraper box with a scraper blade mounted therebelow in precise axial transverse alignment with said solid roller, a wheel for positioning the scraper box, and speed control means for driving said solid roller.

3,842,739

METALLIC MOUTH FOR A PLASTIC CARTRIDGE CASE

John J. Scanlon, Monore; Thomas G. Owen, Fairfield, and Raymond A. Anderson, Easton, all of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

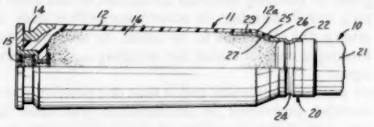
Filed May 31, 1973, Ser. No. 365,590

Int. Cl. F42b *5/26, 5/30, 9/30*

U.S. Cl. 102—43 P **10 Claims**

1. In a cartridge case having a plastic body with an inwardly tapered forward end portion, the improvement comprising a tubular mouth member having a generally cylindrical projectile-receiving portion and a generally frusto-conical interlocking portion, the mouth member being secured within the

plastic body with the inwardly tapered forward end portion of the plastic body engaging the interlocking portion of the



mouth member and with the projectile-receiving portion extending forwardly of the plastic body.

3,842,740

HAND GRENADE DETONATOR

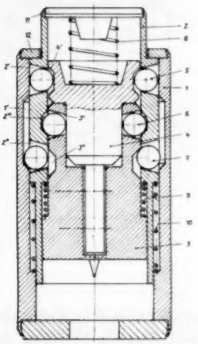
Albert Mirlesse, Geneva, Switzerland, assignor to Interep Associes S.A., Geneva, Switzerland

Filed May 14, 1973, Ser. No. 360,077

Claims priority, application Luxembourg, May 18, 1972, 65387

Int. Cl. F42b *27/00*; **F42c** *15/02*

U.S. Cl. 102—64 **4 Claims**



1. A hand grenade detonator including spring-controlled means for actuating a striker, safety means for maintaining the striker actuating means in a pre-armed position and, in the absence of an acceleration resulting from a throwing movement, for automatically returning the striker actuating means to a safety position, and when this acceleration occurs, for moving the striker actuating means into an armed position, characterized by a spring-urged detent, a spring-urged inertia block reacting to the acceleration of throwing, means for automatically returning the detent to a safety position in the absence of an acceleration which moves the inertia block, and means for freeing the inertia block after production of the acceleration so as to move it from the pre-armed position to the armed position in a manner such that said striker actuating means moves the striker into a detonation position.

3,842,741

SUBPROJECTILE LAUNCHED FROM TELESCOPIC TUBES

Jack Brothers, Panama City, Fla., and Jerry Pentel, Flanders, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 7, 1973, Ser. No. 367,911

Int. Cl. F42b *13/50*

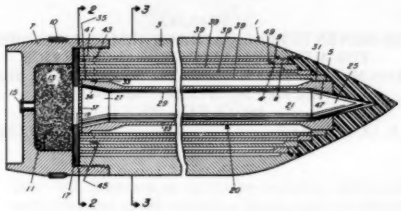
U.S. Cl. 102—69 **7 Claims**

1. A projectile, adapted to be launched from a barrel or other full caliber launch tube at a given velocity, comprising:

a. at least two concentric tubular members of substantially the same axial length, each of said tubular members having a rearwardly-facing internal shoulder at the forward end thereof, each of said tubular members except the outermost one having a forwardly-facing external shoulder at the rear end thereof, said outermost tubular member being adapted to slidably engage the bore of said full caliber launch tube;

b. a base member closing the rear end of said outermost tubular member;

c. an elongated generally cylindrical subprojectile concentrically disposed within said tubular members and adjacent to said base member, said subprojectile having an axial length at least equal to that of the next adjacent tubular member and having a forwardly-facing external shoulder on the rear end thereof; and



d. means including an explosive propelling charge in said projectile for extending said tubular members and launching said subprojectile from said projectile after said projectile has been launched from said launch tube, to increase the velocity of said subprojectile to a value substantially higher than said given projectile velocity;

each of said subprojectile and said tubular members being substantially in contact with and telescopically slidable forwardly within the next outer tubular member when said subprojectile is launched until said forwardly-facing shoulders engage said rearwardly-facing shoulders, whereby said tubular members form an extended closed barrel for said subprojectile.

3,842,742

ELECTRICAL IGNITER WITH A CERAMIC OR QUARTZ ELEMENT AS SOURCE OF ELECTRICAL ENERGY FOR SHELLS OR MISSILES, AND PARTICULARLY FOR SMALL-CALIBER SHELLS

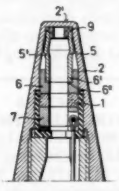
Hans-Dieter Harnau, Wuppertal-Barmen, Germany, assignor to Rheinmetale GmbH, Dusseldorf-Nord, Germany

Filed June 29, 1973, Ser. No. 374,920

Claims priority, application Germany, June 30, 1972, 2232051

Int. Cl. F42c *11/02*

U.S. Cl. 102—70.2 GA **3 Claims**



1. An electric ignition device, comprising

ceramic means having a piezo effect constituting a source of electrical energy for small-caliber shells,

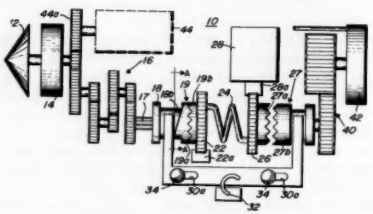
said ceramic means is formed as a ceramic ring,
said ceramic ring being disposed in a tip of a shell and having an upper annular surface,
an annular pressure piece,
a pressure transmission tube provided in said tip of said shell and resting on said annular pressure piece,
said pressure piece being seated flat on said upper annular surface of said ceramic ring,
another ring supporting said ceramic ring from a bottom of the latter,
a safety device,
a wire means fastened to said another ring for producing an electrically conductive connection with said safety device, and
said pressure piece having a milling forming an inner supporting edge for the inserted end of said pressure transmission tube.

3,842,743

AIR-DRIVEN TURBINE SAFE AND ARM ARRANGEMENT FOR A FREE-FALLING ORDNANCE DEVICE

Cyrus M. Zittle, 7723 E. Vernon St., Scottsdale, Ariz. 85257

Filed May 29, 1973, Ser. No. 364,996
Int. Cl. F42c *15/12*
U.S. Cl. 102—81.2 **10 Claims**



1. Fail-safe fuze apparatus for a free-falling ordnance device wherein energy extracted from the air stream may be utilized for the arming thereof, said apparatus including in combination:
an air turbine energized by the air stream during free-fall of the ordnance device;
a helical torsion spring;
means for coupling said air turbine to said torsion spring to effect the continuous winding thereof and consequent storage of a certain amount of energy therein during a first time interval;
timing means for releasing the stored energy in said torsion spring following a second time interval which encompasses at least said first time interval;
arming means utilizing said torsion spring stored energy to effect arming of the ordnance device; and
clutch means for totally disengaging said arm turbine and coupling said torsion spring to said arming means prior to the release of said torsion spring by said timing means.

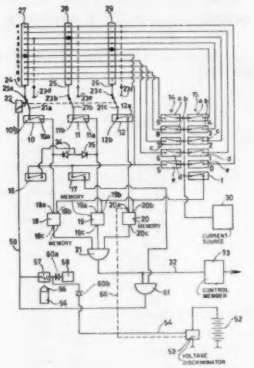
3,842,744

SYSTEM FOR CONTROLLING THE MOVEMENT OF A VEHICLE OR OBJECT ALONG A PATH

Willem Leyzers Vis, 16, Drechtstraat, Leiden, Netherlands

Filed Feb. 21, 1973, Ser. No. 334,429
Claims priority, application Netherlands, Feb. 21, 1972, 7202261
Int. Cl. B61l *1/08*
U.S. Cl. 104—88 **16 Claims**

1. A system for controlling the direction of a vehicle member along a path comprising:
at least two code scanning switch members positioned in juxtaposition transverse to the direction of movement of the vehicle;
a group of selecting switches connected to said code scanning switch members in accordance with a code determining the direction to be taken by said vehicle and forming a control circuit for initiating a path-controlling signal;
code activating members and at least one position activating member positioned in juxtaposition transverse to the direction of the movement of said vehicle along the path for actuating said code scanning switch members to initiate said path-controlling signal for a particular combination of said code activating members;
selecting switching systems having a number of outputs;
memory means switchable from a first condition to a second condition, said memory means constituting a number of control circuits;



said code scanning switch members are connected to the inputs of said selecting switching systems and to said memory means whereby memory means constituting a given control circuit are switched from said first condition to said second condition by a memory control signal supplied via a representative code scanning switch member and a selecting switching system for generating a path control signal;
a memory control signal source;
position scanning switch members interconnecting said memory control signal source and the mutually corresponding output connections of said selecting switching systems, said position scanning switch members are arranged with respect to said code scanning members to be energized by at least one of said position activating members with movement of said code scanning switch members past said code activating members.

3,842,745

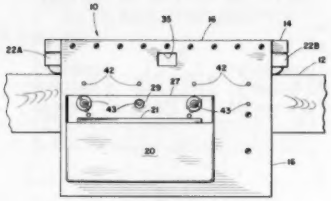
FENCE PAINT HOLDER

Richard Lloyd Jones, III, 1754 E. 30th St., Tulsa, Okla. 74114

Filed May 21, 1973, Ser. No. 361,970
Int. Cl. E01b *25/22*
U.S. Cl. 104—93 **11 Claims**

1. A roll-along type of paint container carriage comprising:
a. an inverted U shaped sheet frame having a top, a back wall and a front wall;
b. at least one pair of spaced rollers mounted to the internal surface of each wall of said frame, all rollers having their axes perpendicular to the longitudinal axis of the frame,

the frame adapted to be supported in an inverted position by the rollers on a substantially horizontal rail;

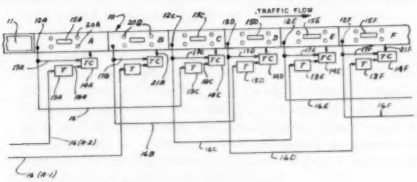


c. a paint container removably supported on the outside surface of the front wall.

3,842,746
PROPORTIONAL THRUST CONTROL FOR LEVITATED VEHICLES

Lowell A. Kleven, Bloomington, Minn., assignor to Uniflo Systems Company, Minneapolis, Minn.

Filed June 2, 1972, Ser. No. 259,314
Int. Cl. B61b *13/08*
U.S. Cl. 104—147 R **11 Claims**



1. A proportional propulsive power control system for vehicles moving along a track under propulsive power comprising means dividing said track into a plurality of sections including vehicle detectors at each of said sections, means for timing the traversing of said vehicles between two of said vehicle detectors, and control means responsive to passage of a selected vehicle past one of said vehicle detectors for supplying a variable control signal for controlling propulsive power to said selected vehicle in a selected track section, said signal being variable in proportion to the elapsed time subsequent to a selected time period required for said selected vehicle to move from said one vehicle detector to a second vehicle detector.

3,842,747
ELECTROMAGNETIC SUSPENSION AND GUIDE SYSTEM FOR VEHICLES ADAPTED TO SWITCH TRACKS

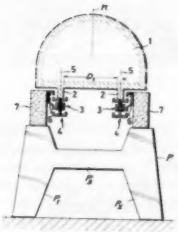
Peter Schwarzler, Furstenfeldbruck, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Jan. 16, 1973, Ser. No. 324,135
Claims priority, application Germany, Jan. 17, 1972, 2201984
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **14 Claims**

1. In a suspended-vehicle system comprising a track and a vehicle adapted to travel along said track, the improvement which comprises:

at least two rows of electromagnets extending in the direction of vehicle travel and mounted on said vehicle in spaced-apart relationship; and

armature rails cooperating with the electromagnets of said rows and mounted on said track for magnetically supporting said vehicle, said armature rails and said electromagnets being constructed and arranged so as to close magnetic paths between each electromagnet and the respective rail on either side of each of said rows, each of said rows of electromagnets including a plurality of electromagnets each having a core and a coil wound on said core, said cores being symmetrical about respective vertical planes and having flanges extending therefrom in opposite directions for closing magnetic paths with arma-

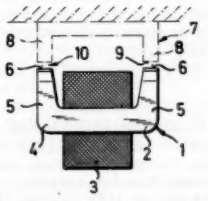


ture rails disposed in mirror-symmetrical relationship with reference to the respective plane, each of said cores being of double-T profile and including a vertical web and upper and lower flanges extending laterally from said web, said coil being would around said web, said armature rails being of recumbent generally U-profile, each of said rails having a base connected to a generally vertical flank of said track and a pair of flanges reaching toward the respective row of electromagnets and cooperating with the flanges thereof to form a pair of air gaps with each electromagnet, disposed one above the other.

3,842,748
ELECTROMAGNETIC SUSPENSION AND GUIDE SYSTEM PARTICULARLY FOR VEHICLES

Peter Schwarzler, Furstenfeldbruck; Gerhard Bohn, and Helmut Schauberger, both of Munich, all of Germany, assignors to Krauss-Maffei AG, Munchen, Germany

Filed Aug. 11, 1972, Ser. No. 280,074
Claims priority, application Germany, Sept. 15, 1971, 2146142
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **12 Claims**



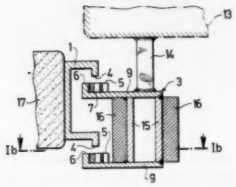
1. An electromagnetic suspension or guide system comprising a support, an armature rail fixed to said support and an electromagnet juxtaposed with said rail, said electromagnet including a generally U-section elongated core having a web and a pair of lateral shanks extending from said web toward said rail, said shanks being of diminishing thickness away from said web toward respective pole faces formed on said shanks to maintain the magnetic flux density substantially constant in

transverse cross-sections through said shank from said web toward said pole faces, and a coil composed of turns of a light metal or a light-metal alloy wound upon said web, said shanks being formed with extensions longitudinally of said core along said pole faces in opposite directions beyond said coil.

3,842,749
TRANSPORT SYSTEM WITH MAGNETIC-SUSPENSION VEHICLE

Peter Schwarzler, Furstenfeldbruck, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munchen, Germany

Filed Jan. 16, 1973, Ser. No. 324,151
Claims priority, application Germany, Jan. 18, 1972, 2202275
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **11 Claims**



1. A transport system comprising a track formed by at least one substantially continuous load-supporting member including an armature rail and an electromagnetically suspended and guided vehicle travelling along said track, said vehicle including a body member and at least one row of electromagnets extending in the direction of vehicle travel on said body member, said armature rail being generally of U-section with a substantially vertically oriented web mounted on said member and substantially horizontally oriented shanks projecting codirectionally from said web, said shanks of said armature rail being turned downwardly at their free ends thereby forming substantially vertically oriented pole pieces, said electromagnets including respective magnet cores of generally U-section juxtaposed with said armature rail across airgaps spanned by magnetic fields, and electrically excitable coils for inducing magnetic fields in said cores, said magnet cores each being formed with a substantially vertically disposed web and substantially horizontally disposed shanks extending codirectionally from the web of the respective magnet core, said shanks of each core being turned upwardly at their free ends to form substantially vertically disposed pole pieces defining said airgaps with respective downwardly turned pole pieces of said armature rail.

3,842,750
ELECTRO-MAGNETIC SYSTEM FOR THE GUIDED SUSPENSION OF A MOVABLE VEHICLE

Jurgen Miericke, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

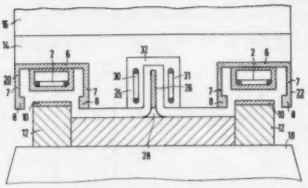
Filed Jan. 18, 1973, Ser. No. 324,812
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 SS **3 Claims**

1. An electromagnetic system for the guided suspension of a movable vehicle comprising

a superconductive magnetic loop for generating a magnetic field;

a ferromagnetic element of U-shaped profile disposed about and connected to said magnetic loop, said ferromagnetic element having a pair of legs disposed on opposite sides of said magnetic loop; and

a reaction element of a conductive nonmagnetic material disposed in said field of said magnetic loop between said

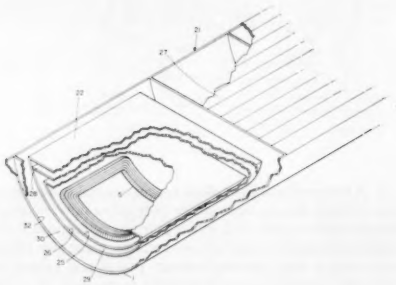


legs of said ferromagnetic element and in parallel relation to said magnetic loop.

3,842,751
TRANSPORTATION SYSTEM EMPLOYING AN ELECTROMAGNETICALLY SUSPENDED, GUIDED AND PROPELLED VEHICLE

Richard D. Thornton, Concord, and Henry H. Kolm, Wayland, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 165,616, July 23, 1971, Pat. No. 3,768,417. This application May 1, 1973, Ser. No. 356,242
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 SS **5 Claims**

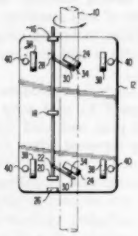


1. For use in a transportation system employing magnetic suspension, a passive vehicle having a cylindrical lower surface and carrying a plurality of superconducting coils distributed longitudinally within the vehicle and adjacent said lower surface at close-spaced intervals, the superconducting coils being contoured to the shape of the vehicle lower surface and being adapted, when energized with a persistent supercurrent, to generate a magnetic dipole field having an intensity at least of 1,000 to 3,000 gauss at a distance of approximately twenty-five centimeters outward from the vehicle lower surface, first container means surrounding each superconducting coil to hold liquid helium, and second container means surrounding the first container means to hold another cryogenic fluid, the first container means being nested within the second container means and separated therefrom by a narrow vacuum space, each super-conducting coil being rigidly mechanically secured to its associated first container means and each first container means being connected to its associated second container means through a plurality of tension spokes each of which has associated therewith compressible washers to absorb shock loads, the spokes being adapted to transmit forces that originate in the superconducting coils to the second container means without undue transmittal of heat therebetween.

3,842,752
SPEED CONTROL

Warren J. Harwick, Racine, Wis., assignor to Rex Chainbelt, Inc., Milwaukee, Wis.

Filed Dec. 14, 1972, Ser. No. 315,060
Int. Cl. B61b *13/00*; B61k *7/18*
U.S. Cl. 104—166 **4 Claims**



1. A device for controlling the speed of a car which is driven by the frictional interaction of a propulsion wheel and a reaction wheel, one of which wheels is rotatably mounted on a bearing on the underside of said car and the other of which wheels is rotatably mounted in a trackway over which said car is driven, said device comprising:

1. a pivot means permitting the one of said wheels which is mounted on the underside of said car to rotate about an axis which is perpendicular to the body of the car;
2. a probe which is slidably mounted relative to the body of said car and laterally spaced from the axis of pivot means;
3. a linkage arm operatively connecting said probe to said pivot means, said linkage arm being integrally connected to said pivot means intermediate the ends of said linkage arm and having a slot therein located where said linkage arm is connected to said probe to permit lost motion as said probe moves linearly and said linkage arm rotates about said pivot means; and
4. a spring connecting said linkage arm to said car on the side of said linkage arm opposite from said probe so as to bias said linkage arm in a direction which in turn biases said probe to normally extend in front of the body of said car,

whereby the linear movement of said probe causes the rotational movement of said wheel about said pivot means.

3,842,753
SUSPENSION DAMPENING FOR A SURFACE SUPPORT VEHICLE BY MAGNETIC MEANS

Charles Theodore, Coronado, and James A. Ross, La Jolla, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 3, 1973, Ser. No. 385,364
Int. Cl. B61d *1/00*
U.S. Cl. 105—157 R **11 Claims**

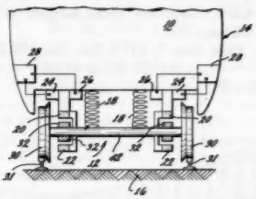
1. A vehicle magnetic dampening apparatus for dampening the displacement between the sprung and unsrpung portions of a vehicle comprising:

a pair of electro-magnetic force field members fixedly attached to said sprung portion;

a ferro-magnetic member carried by said unsprung portion positioned between said pair of electro-magnetic force field members and normally spaced from each of said pair of electro-magnetic force field members, between said members;

suspension means positioned between and attached to said sprung and unsprung portions of said vehicle for suspending said sprung portion from said unsprung portion in an average spaced apart position; and

control means responsive to a change in relative positions of said ferro-magnetic member and said electro-magnetic force field members from said average spaced apart position to a non-average spaced apart position, said control means is active to vary the energizing power of the force

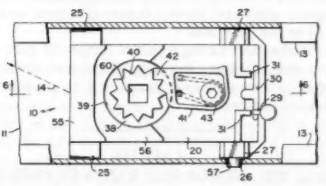


fields of said pair of electro-magnetic force field members so as to damp any vertical displacement of said unsprung portion and said control means is effective to return said ferro-magnetic member to said average spaced apart position any time the vehicle encounters a force which produces a non-equilibrium position.

3,842,754
VEHICLE HOLDDOWN

Roland P. Jones, Westland, Mich., assignor to Cast Metal Industries, Inc., Farmington, Mich.

Filed Sept. 13, 1973, Ser. No. 397,138
Int. Cl. B60p *7/08*
U.S. Cl. 105—368 T **7 Claims**



1. A vehicle holddown comprising:

a hollow, box-like body having a bottom wall and a top wall spaced therefrom, and an open front end for access to the space between the walls;

a vertically axised shaft arranged within the body and having its lower end rotatably journalled within an opening formed in the bottom wall, whereby an end of a flexible holddown element may be extended into the body through the open end thereof and engaged with the shaft for winding around the shaft;

a co-axial, annular ring, of considerably larger diameter than the shaft, formed on the upper end of the shaft, with said ring being rotatably journalled within a correspondingly sized opening formed in the body top wall;

a co-axially arranged gear-like toothed ratchet wheel formed upon the upper surface of the ring, with the wheel being of a smaller diameter than the ring so that the lower portion of the wheel is surrounded by an annular border formed by the ring;

a horizontally swingable pawl arranged upon and pivotally connected to the top wall of the body, and having a ratchet engaging pawl end portion engaged with at least one tooth of said ratchet wheel and simultaneously overlapping the portion of said ring forming border adjacent to and extending radially outward of said engaged tooth for thereby simultaneously holding the wheel against

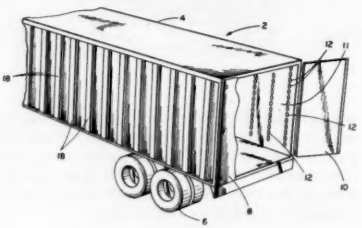
rotation in one direction and holding the shaft against upward axial movement for locking the shaft within the body.

3,842,755

FREIGHT BRACING AND LOADING APPARATUS

George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.

Filed May 7, 1973, Ser. No. 358,252
Int. Cl. B61d *45/00*
U.S. Cl. 105—480 9 Claims



1. In a container for a vehicle or the like a side wall construction for lading control including:

an upright generally U-shaped exterior side post,

an upright lading attachment panel carried at the post and substantially flush with the interior of the container,

said upright panel being provided with a plurality of vertically spaced logistic slots for receiving lading control elements,

a side wall covering the panel and apertured to expose the logistic slots and having fastening means attaching the wall to the post, and

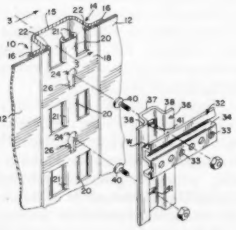
said exterior post having a pair of flanges on each end of the post and extending inwardly of the post toward one another to form a pair of spaced slots to provide a track to receive said panel.

3,842,756

LADING TIE ANCHOR FOR RAILWAY FREIGHT CAR

Walter J. Marulic, Gary, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,461
Int. Cl. B61d *45/00*
U.S. Cl. 105—480 4 Claims



1. A railway vehicle adapted to restrain transported cargo with both flexible straps and transversely disposed rigid members and including a wall unit comprising a plurality of longitudinally spaced vertical wall posts interconnected by wall sheets and having a generally hat-shaped cross section with laterally extending flanges for attachment of the wall sheets and having an open portion disposed inwardly of the railway vehicle, the improvement comprising:

a strap anchor strip connected over the open portion of at least one of the vertical wall posts to form an enclosed vertical box beam,

said strip including vertically spaced integral pairs of openings,

each of said pairs of openings being laterally spaced relative to each other and forming therebetween an integral strap anchor post portion,

said post portion having laterally spaced vertical edges defining first sides of said openings,

each of said first sides including integral flanges substantially the same width as said strip and extending the height of said openings,

said flanges each having an arcuate portion curved outwardly with respect to said strip and being disposed within said wall post and said integral flange portion further including terminal edges facing each other outwardly of said anchor post portions to rigidify the same, each of said openings also including second vertical sides spaced laterally with respect to said first sides,

said second sides including vertical curved edge portions facing outwardly within said wall posts,

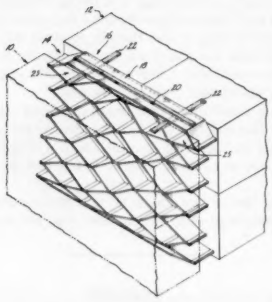
and belt rail attaching openings provided between said vertically spaced strap anchor post portions, said attaching openings having a contour for removably retaining belt rail fastening means.

3,842,757

SUSPENDIBLE LOAD SPACER

William P. Kinnune, Jr., Portland, Oreg., assignor to Western Kraft Corporation, Portland, Oreg.

Filed May 4, 1973, Ser. No. 357,502
Int. Cl. B61d *45/00*
U.S. Cl. 105—486 4 Claims



1. A suspendible load spacer for holding apart a pair of adjacent laterally spaced loads comprising

spacing means removably placeable between such loads,

means adjacent the top of said spacing means defining an aperture which opens to laterally opposite sides of the spacing means, and

an elongated, unitary, relatively rigid suspension member removably insertable into and through said aperture to a vertically captured position therein, wherein its opposite ends extend beyond said opposite sides of the spacing means, said suspension member, when so inserted, and with said spacing means placed between a pair of loads, being adapted to rest with each of its opposite ends seated on a different one of the loads, thus to suspend and retain the spacing means between the loads,

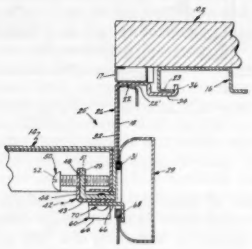
said suspension member being adjustable in said aperture to an infinite number of different angular and projecting positions relative to said spacing means, adjustment of the position of said suspension member relative to said spacing means simultaneously adjusting the positions of its said opposite ends relative to such loads.

3,842,758

OVER DRAWER HEAD SUPPORT

Michael J. Armstrong, and Richard L. Houtman, both of Grand Rapids, Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed Aug. 3, 1972, Ser. No. 277,681
Int. Cl. A47b 57/00
U.S. Cl. 108—98 18 Claims



1. An over drawer head support for joining a typewriter table or the like to a desk or the like having at least one drawer or the like, said support comprising:

a bracket including suspension means for suspending said support over a drawer head of a drawer;

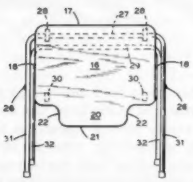
clamping means operably connected to said bracket at a point spaced from said suspension means and adjacent a drawer handle on said drawer and including means cooperating with said drawer handle for securing said support thereto whereby said support is tightly clamped to said drawer; and attaching means on one of said bracket and said clamping means for attaching a table to said support.

3,842,759

TABLE

Morton I. Thomas, 125 South St., Monroe, N.Y. 07055

Division of Ser. No. 272,050, July 14, 1972,. This application Aug. 9, 1973, Ser. No. 386,866
Int. Cl. A47b 13/00
U.S. Cl. 108—161 1 Claim



1. For use with a chair having side arms with a predetermined lateral spacing therebetween, a table comprising a table top and leg means mounted on the underside of said table top, said table top comprising a first portion having a width greater then the spacing between said side arms and for location adjacent and across the chair immediately forward of the outer ends of the side arms, a second portion integral with said first portion and having a width somewhat less then the spacing between said side arms locatable between the side arms of said chair for projecting inwardly of the outer ends of said side arms for disposition adjacent the abdomen of the user.

3,842,760

REFRACTORY COMPOSITION AND SHAPED ARTICLE CONTAINING CARBON AND SILICON

Joseph R. Parsons, Park Forest, and Harold L. Rechter, Chicago, both of Ill., assignors to Chicago Five Brick Company, Chicago, Ill.

Continuation-in-part of Ser. No. 241,785, April 6, 1972,. This application Aug. 4, 1972, Ser. No. 278,038
Int. Cl. C04b 35/52
U.S. Cl. 106—56 1 Claim

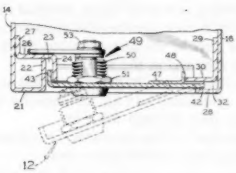
1. The method of producing a high strength oxidation resistant shaped article which comprises forming a composition consisting essentially of 20–80 percent by weight of amorphous carbon or graphite, 5–30 percent silicon or ferrosilicon, and the balance of clay, grog, alumina, bentonite, bauxite, zircon or mixtures thereof to shape, and heating the shaped composition through a temperature of 800°F–2,500°F in no more than four hours and then heating at above 2,500°F for at least three hours.

3,842,761

WALL MOUNTED SECURITY BOX

Stephen A. Bloom, Miami, Fla., assignor to Maximum Security Systems International, Inc., Miami, Fla.

Filed July 9, 1973, Ser. No. 377,816
Int. Cl. E05g 3/00
U.S. Cl. 109—59 3 Claims



1. A security receptacle comprising a box having a rectangular access opening in a wall thereof, a frame delineating said opening and including a pair of opposite side legs and a pair of opposite end legs, a first of said side legs having an inwardly facing first channel therein and a second of said side legs and each of said end legs having forwardly facing second channels therein, a rectangular closure member removably and separably registering with said access opening and including a rectangular plate having a border along a first side edge thereof separably transversely slidably and swingably engaging said first channel and rearwardly directed flanges along the opposite side edge and along the opposite end edges of and integrally formed with said plate releasably separably engaging respective second channels, said closure member being swingable about said first channel to retract said rearwardly directed flange along said plate opposite side edge from the frame second side leg second channel, lock means including a latching arm supported by said closure member and spaced rearwardly thereof and swingable between a lock position in proximate registry with the rear face of said frame second side leg and a release position out of registry therewith, and key actuated means on said closure member for manipulating said latching arm.

3,842,762

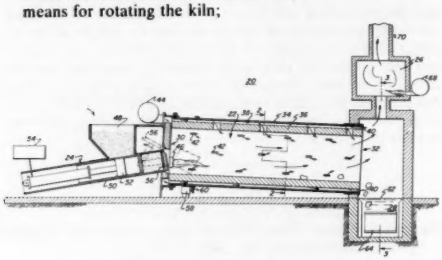
APPARATUS FOR DISPOSING OF SOLID WASTES

Edward A. Sargent, Brookville, N.Y., and Arthur J. Doner, Kearny, N.J., assignors to Grumman Ecosystems Corporation, Bethpage, N.Y.

Filed July 13, 1973, Ser. No. 379,190
Int. Cl. F23g 5/06
U.S. Cl. 110—14 7 Claims

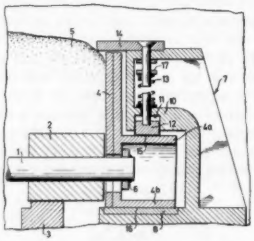
1. Apparatus for disposing of solid waste material comprising:

a cylindrical kiln having a feed end and a discharge end and rotatable about its axis, mounted such that the feed end is somewhat higher than the discharge end;
means for feeding compacted solid waste material into the kiln through the feed end thereof;
first sealing means for sealing the feed end of the kiln from the ambient environment such that a compacted slug of solid waste material may be fed to the kiln without breaking the seal;
second sealing means for sealing the discharge end of the kiln from the ambient environment;
means for rotating the kiln;



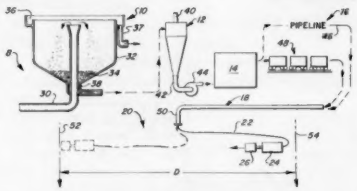
means for burning the solid waste material in the kiln;
means for introducing combustion supporting gas such as air into the kiln to thereby promote the burning of the solid waste material in the kiln;
a secondary combustion chamber mounted at the discharge end of the cylindrical kiln for incinerating those combustibles which pass through the kiln;
a stack connected to the secondary combustion chamber for removing the exhaust gases; and
collecting means for collecting solid ash which is ejected from the discharge end of the cylindrical kiln.

3,842,763
TRAVELING GRATE
Reinhard Korting, Neubeckum, Germany, assignor to Polysius AG, Neubeckum, Germany
Filed Aug. 31, 1973, Ser. No. 393,648
Claims priority, application Germany, Dec. 5, 1972, 7244502
Int. Cl. F23b *1/22*
U.S. Cl. 110—40 C **6 Claims**



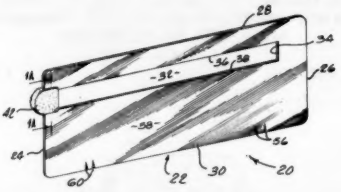
1. A traveling grate having an upstanding side plate at least at one side thereof; a stationary grate casing adjacent said side plate and having a slide rail; vertically spaced flanges carried by said side plate, the lower one of said flanges engaging said rail; a sealing strip carried by said casing in engagement with the upper one of said flanges; and spring means acting on said strip and yieldably urging it toward said upper one of said flanges.

3,842,764
SYSTEM FOR DISPOSING OF SEWAGE SLUDGE
William J. Bauer, 422 S. Park Rd., La Grange, Ill. 60525
Filed May 24, 1972, Ser. No. 256,380
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **10 Claims**



1. A method of disposing of sewage sludge comprising conveying a concentrated aqueous sewage sludge to a fixed supply outlet located in the vicinity of a field, traversing said field with an implement having an element for opening a furrow in the soil, continually opening a furrow in the soil of such field with said implement during each such traverse, continually conveying said sludge from said fixed supply outlet to said implement through a flexible closed conduit and continually depositing said sludge from said implement into such furrow immediately behind said earth-opening element during each such traverse, and closing said furrow with soil over such deposited sludge immediately behind such implement during each such traverse.

3,842,765
FRINGE-MAKING DEVICE
Herman Milstein, 3525 Bowling Green, Irving, Tex. 75060
Filed May 17, 1973, Ser. No. 361,295
Int. Cl. D05b *23/00*
U.S. Cl. 112—9 **7 Claims**



1. A device adapted to hold multiple loops of a continuous strand of textile material in the form of a winding for cooperation with an auxiliary joining apparatus for facilitating the making of fringe, comprising: a textile strand winding core means hvaing a longitudinal body portion terminating in longitudinally spaced opposite ends and with said longitudinal body portion having opposed transversely spaced side edges extending substantially between said longitudinally spaced ends, said body portion including said transversely spaced side edges thereof, and an intermediate part of said body portion between said transversely spaced side edges thereof, comprising a textile strand winding receiver cooperable for receiving and having wound therearound, in the form of a flattened helical winding, a continuous length or strand of textile material, and with said winding extending a desired length in a longitudinal direction along the length of said body portion between said opposite longitudinally spaced ends, said body portion having a longitudinal textile strand joining recess extending in a longitudinal direction from at least one of said ends of said body portion along the length of said body portion at a predetermined transversely spaced location between said transversely

spaced side edges of said body portion to a recess terminus adjacent to the opposite end of said body portion, said opposite end of said body portion being rigid whereby to effectively rigidify and maintain the relative positions of side parts of said body portion on each side of said textile strand joining recess at said recess terminus; said textile strand joining recess having an entry opening at one of said ends of said body portion to allow removal of textile strand junction means previously formed longitudinally along the length of said recess in and across corresponding portions of a plurality of loops of a continuous strand of textile material previously transversely wound around said body portion comprising said textile strand winding receiver and extending transversely across said longitudinal recess; said entry opening defined by said one end of said longitudinal body portion at said corresponding end of said textile strand joining recess being of sustantially narrower width in a transverse direction than the width of said end of said longitudinal body portion and being provided with a completely physically separate entry-opening-rigidifying entry gate and keeper means, which is similarly transversely of substantially narrower width in a transverse dimension than the width of said end of said longitudinal body portion and of a very slightly narrower width than the width of the corresponding entry opening and which is controllably insertible to a predetermined degree into said entry opening in firm positive edge tongue-in-groove rigidifying engagement with inwardly directed side edges of said longitudinal body portion on each side of and defining said entry opening in a manner positively and effectively forming a temporary end bridge across and entirely between said side edges of said longitudinal body portion defining said entry opening and positively rigidifying same in a manner producing great transverse rigidity across said entry opening and to the corresponding entire end of said longitudinal body portion having said narrower entry opening defined therein, and with said entry-opening-rigidifying entry gate and keeper means being controllably slidably temporarily completely removable from said tongue-in-groove rigidifying engagement with said immediately outwardly adjacent side edges of said longitudinal body portion defining said entry opening to allow said removal from the previously closed longitudinal joining recess of said textile strand junction means previously formed longitudinally along the length of said recess in and across corresponding portions of a plurality of loops of a continuous strand of textile material previously transversely wound around said body portion comprising said textile strand winding receiver and extending transversely across said longitudinal recess.

3,842,766

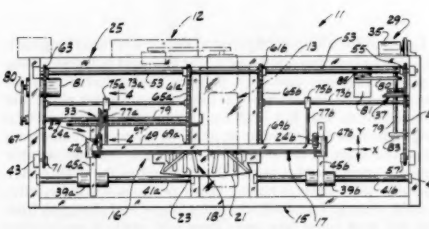
DRIVE FOR PROGRAMMABLE SEWING APPARATUS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Miss.

Filed Nov. 1, 1973, Ser. No. 411,777

Int. Cl. D05b *21/00*; **F16h** *21/16*

U.S. Cl. 112—121.12 **30 Claims**



1. A drive for linearly moving a driven member in increments along an axis under control of a programmer comprising a rotary power shaft, means for continuously driving said shaft, a plurality of rollers carried by the driven member, each roller having its axis of rotation disposed for rolling contact of the roller with said shaft, means mounting each roller on the driven member for pivotal movement about an axis in a plane perpendicular to the axis of rotation of the roller, each roller being pivotally movable about its pivotal axis from a neutral position in which its axis of rotation is parallel to the axis of the shaft for rotation of the roller by the shaft without traverse of the driven member along the shaft to an angled position in which its axis of rotation is skewed with respect to the axis of the shaft for linear movement of the driven member along the shaft, and means operable by said programmer for pivotally moving said rollers about their respective pivotal axes to effect movement of the driven member in one direction or the other along said shaft, said means being interconnected with said rollers to cause the rollers to return to their neutral position in response to movement of the driven member.

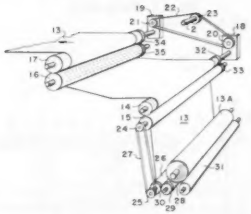
3,842,767

APPARATUS AND METHOD TO TUFT PILE FABRICS

Joe T. Short, West Point, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Int. Cl. D05c *15/14*

U.S. Cl. 112—266 **4 Claims**



1. A method to produce a tufted pile fabric on a tufting machine having front feed rolls and back feed rolls comprising the steps of: providing a supply of pile fabric backing material, supplying the fabric to the front feed rolls, tufting the backing material, supplying the tufted fabric to the back feed rolls and placing the backing material under a tension higher than the tension of the backing material between the front and back feed rolls prior to supplying the backing material to the front feed rolls.

3,842,768

CELLULAR FLOTATION STRUCTURE

Michel Antoine Jules Maistre, 19 rue d'Austerlitz, 33 Bordeaux-Cauderan, France

Filed Mar. 17, 1972, Ser. No. 235,537

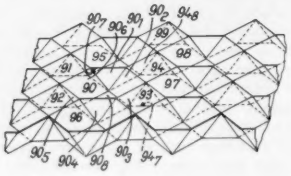
Claims priority, application France, Mar. 18, 1971, 71.09587

Int. Cl. B63g *8/04*

U.S. Cl. 114—16 R **13 Claims**

1. A buoyant cellular structure for deep immersion in water having a high resistance to implosion relative to the overall density thereof when immersed, comprising a plurality of water-tight cells of identical hollow rhombododecahedral shape and arranged in juxtaposed relation, each wall of juxtaposed cells constituting a common wall there-between to eliminate intermediate voids, said cells being arranged in at least two superposed layers, each of said cells being formed of two semi-cells, each in the form of a semi-rhombododecahedron having free edges surrounding an aperture, a pair of said semi-cells being joined together along their free edges to form a cell, said free edges and apertures lying in median planes of said cells, a plurality of semi-cells being arranged as panels in which the apertures of said semi-cells face outwardly on at least one of said panels and a plurality of

said panels are assembled in stacked relation, each of the semi-cells on the at least one surface of one panel forming with each facing semi-cell of an adjacent panel, a layer of



water-tight cells, the common walls of said cells having a thickness between about one/twentieth and about one/fourth of the diameter of the rhombododecahedral cells.

3,842,769

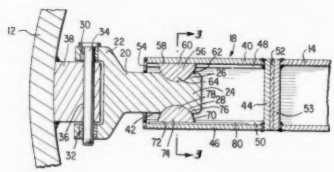
SLIP COUPLING FOR SUBMARINE DECKS

Arthur W. Maynard, Norwich, Conn., assignor to William E. Bonafede, Yantic, Conn., a part interest

Filed May 11, 1973, Ser. No. 358,741

Int. Cl. B63g *8/00*

U.S. Cl. 114—16 R **8 Claims**



1. In a submarine having a hull and at least one internal, generally horizontal deck supported by said hull, the improvement which comprises coupling said deck to said hull with a plurality of coupling devices, each of said coupling devices comprising

a bearing member having a bottom bearing surface generally hemispherical in shape and a top bearing surface which is generally flat,

a generally horizontal arm member one end thereof being pivotally connected to said hull and the other end thereof having a generally hemispherically shaped socket in the top side thereof, said socket being adapted to receive the hemispherically-shaped surface of said bearing member in rotational relationship therewith, and

a slide member having one end there fixedly connected to said deck and including a generally horizontal slot in the upper part thereof adapted to receive the flat surface of said bearing member in slideable relationship therewith.

3,842,770

VARIABLE DEPTH MOORED SWEEP

Edward J. Hedbawny, Panama City; Cecil N. Goff, Maitland, and Aubrey G. Holston, Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1969, Ser. No. 851,140

Int. Cl. F42b *19/04*; **B63b** *17/00*, *35/00*

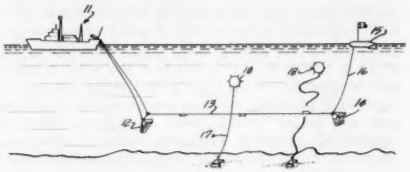
U.S. Cl. 114—20 B **10 Claims**

1. A controlled submarine vehicle adapted for movement within an aqueous medium having upper and lower boundary surfaces, said vehicle comprising in combination:

a body portion;

hydrodynamic lift producing means attached to said body portion in such a manner as to produce a dynamic force in response to movement through said aqueous medium such as to act on said body portion in a direction generally at right angles to the direction of travel thereof for causing movement between said boundary surfaces;

attitude control means attached to said body portion in such a manner as to alter the angular attitude thereof relative to its direction of movement, so as to alter the angle of attack between said hydrodynamic lift producing means



and the aqueous medium for altering the dynamic lift produced thereby; and

control circuit means carried within said submarine vehicle and effectively attached to said attitude control means for movement thereof in response to detected changes of position with respect to a selected one of said upper and lower boundary surfaces and additionally responsive to detected positional changes in excess of a predetermined amount with respect to the nonselected one thereof for self-contained guidance of said controlled submarine vehicle in said aqueous medium.

3,842,771

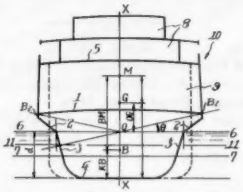
SHIPS LINES

Yoshiaki Murata, 2-17-19 Ofuna Kamakura, Kanagawa Prefecture, Japan

Filed May 30, 1972, Ser. No. 257,510

Int. Cl. B63b *1/32*

U.S. Cl. 114—56 **2 Claims**



1. A hull for a ship configured to define a vertical longitudinal center plane and a full load water line, said hull comprising a pair of opposed side shell platings having lower portions slanted relative to said vertical longitudinal center plane and directed from said full load water line toward said vertical longitudinal center plane at an angle to lower the metacenter when the draft of the ship is reduced such that metacentric height is maintained substantially constant as the draft varies, said side shell platings having upper portions slanted relative to said vertical longitudinal center plane and directed from said full load water line away from said vertical longitudinal center plane to form a protruding flared structure for a midship section of the ship, the included angle between each of said upper portions of said side shell platings and said vertical longitudinal center plane being greater than the included angle between each of said lower portions of said side shell

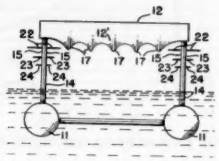
platings and said vertical longitudinal center plane but less than 90°.

3,842,772

SEMISUBMERGED SHIP WITH BOW IMPACT ALLEVIATOR

Thomas G. Lang, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 16, 1973, Ser. No. 379,509
Int. Cl. B63b *3/00*
U.S. Cl. 114—61 **5 Claims**



1. In a semisubmerged ship having at least one elongate hull completely disposed beneath the water's surface, and a platform joined to the elongate hull and carried above water's surface by at least one water-surface piercing strut dependent from the platform, an improvement therefor is provided comprising:

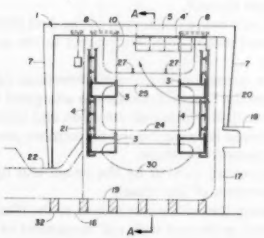
means carried on the semisubmerged ship above the water's surface for reducing the effects of impact when waves higher than the length of at least one water-surface piercing strut approach the platform, the impact reducing means includes a plurality of dependent cusp-shaped members forming the underside of said platform in a juxtaposed relationship and the impact reducing means further includes a plurality of pairs of oppositely extending members mounted in a vertically spaced relationship on each forwardly disposed strut.

3,842,773

HULL CONSTRUCTION METHOD EMPLOYING HULL CONSTRUCTION WORK UNITS

Hisayuki Kurose; Akira Kawase, both of Yokohama; Kazuo Aoyagi, Kamakura, and Noboru Uchiyama, Ayase, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1971, Ser. No. 152,353
Int. Cl. B63b *3/00*
U.S. Cl. 114—65 R **7 Claims**



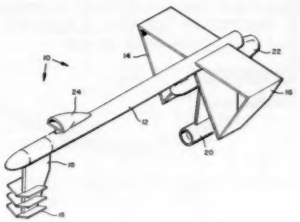
1. A method for constructing a hull having center and wing tanks formed from prefabricated blocks which comprises assembling adjacent wing and center tank blocks; deploying a lower work unit in the form of a gantry with legs to straddle a wing tank block and a contiguous wall of a center tank block with one of said legs within the center tank block and the other outside of said blocks; securing said wing and center tank blocks from work stages on said lower unit; moving said lower work unit longitudinally of the hull to a new work site; disposing rails upon upper structural elements of said wing and center tank blocks secured by said lower work unit; mounting an upper work unit on said rails for movement therealong, said upper work units comprising work platforms movable between extended, operable positions and retracted, transport positions; completing upper hull structures from said work platforms in said operable positions; moving said platforms to said retracted positions and advancing said upper work units to a different work site within the hull.

3,842,774

REMOTELY CONTROLLED MOBILE SEAGOING SENSOR PLATFORM

Floyd A. Kinder, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 14, 1973, Ser. No. 397,532
Int. Cl. B63b *1/26*
U.S. Cl. 114—66.5 H **6 Claims**



1. For use as a remotely controllable self-propelled seagoing platform vehicle; the combination comprising:

an elongated tubular hull;

a power plant attached to said hull at one end thereof designated as the aft end;

propulsion means associated with said power plant at said aft end effective to propel said vehicle through water;

first hydrofoil means extending from said aft end;

second hydrofoil means spaced from said first hydrofoil means and positioned near the forward end of said hull; and

air supply means communicating with said power plant and opening near said forward end of said vehicle;

said first hydrofoil means including at least one hydrofoil unit comprising a plurality of planar members, at least two of which intersect in a line parallel to and spaced from said hull and extending into the water when the vehicle is underway;

said second hydrofoil comprising at least one planar hydrofoil member extending from said hull with the mid plane of the planar member passing through the longitudinal axis of said hull; and

a plurality of hydrofoil vanes extending angularly from said planar member of said second hydrofoil.

3,842,775

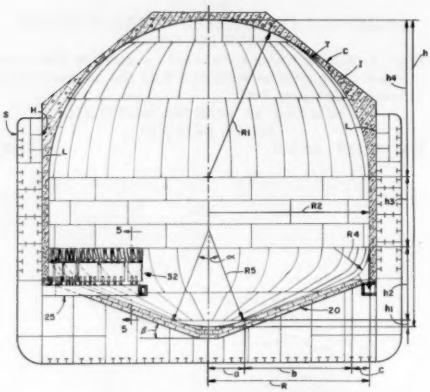
TANK FOR STORING FLUIDS ON A SHIP OR THE LIKE AND TIE DOWN MEANS THEREFOR

Norman W. Edwards, Sewickjey; Michael Petro, Coraopolis, both of Pa.; Jacques Guilhem, La Haver, and Pierre Jean, Montervilliers, both of France, assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,373
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 R **21 Claims**

1. In combination, a tank and tie down means therefor, for containing and transporting low temperature fluid in a ship or

the like, comprising a support for the tank in a bottom portion of a ship or the like, load bearing insulation on said support, said tank supported at its bottom on said load bearing insulation, each extending circumferentially in a direction generally parallel to the curvative of the tank and a plurality of circumferentially spaced apart tie down plates a depending, annular skirt fixed to a lower outer surface portion of the tank and comprising fixed at an upper edge thereof to said tank at circumferentially spaced locations on a lower, outer surface portion of said tank and depending from said tank and connected at a lower edge portion thereof to an inner bottom portion of the ship or the like to hold the tank downwardly against the insulation and prevent both overturning movement of the tank and vertical upward movement of the tank, the circumferential spacing of the plates and their points of attachment to the tank reducing stresses on the tank from the tie down means due to circumferential expansion and contraction of the tank and the attachment of the plates to a lower portion of the tank reducing stresses on the tank from the tie down means due to vertical expansion and contraction of the tank.



3,842,776

ANCHORING SYSTEM

Donald J. Wudtke, Burlington, Wash., assignor to Skagit Corporation, Sedro-Woolley, Wash.

Filed Nov. 28, 1973, Ser. No. 419,760
Int. Cl. B63b *21/50*
U.S. Cl. 114—206 R **11 Claims**

1. An anchoring system for anchoring a structure comprising

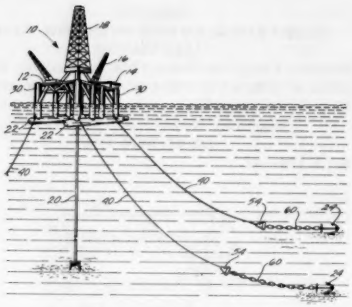
an anchor,

a chain attached to said anchor,

an end connector attached to said chain of generally frustoconical configuration with a convex curvilinear surface at its larger end and means in said larger end for receiving and retaining a link of said chain,

a wire rope having one end secured within the smaller diameter end of said end connector, and

a fairlead shave supported on said structure, said sheave including an inner groove for receiving said wire rope, an intermediate groove, and an outer groove having inner surfaces substantially mating with said convex curvilinear surface, said grooves being concentric along radii of said sheave.

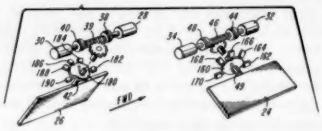


3,842,777

MARINE VESSEL ROLL STABILIZER APPARATUS

Everett P. Larsh, 1001 E. Ridge Ln., Miami, Fla. 33157

Continuation-in-part of Ser. No. 79,240, Oct. 8, 1970, Pat. No. 3,687,100. This application July 19, 1972, Ser. No. 273,331
Int. Cl. B63b *39/06*
U.S. Cl. 114—126 **16 Claims**



1. Marine vessel roll stabilizer apparatus comprising:

a fin member carried by the vessel and pivotally movable with respect thereto,

a first rotary motor and a second rotary motor, each of the rotary motors being adapted to be in continuous operation,

a first electrically operable clutch member,

a second electrically operable clutch member,

means connecting the first clutch member to the fin member for pivotal movement thereof, means connecting the second clutch member to the fin member for pivotal movement thereof,

the first motor being connected to the first clutch member, the second motor being connected to the second clutch member,

the motors operating in opposed directions of rotation so that when the first clutch means is energized the fin member pivotally moves in one direction and when the second clutch means is energized the fin member pivotally moves in the opposite direction,

roll sensor means carried by the vessel and operable with roll movement of the vessel,

means joining the roll sensor means to the clutch members for operation thereof with roll movement of the vessel,

the roll sensor means comprising control mechanism, which includes a pendulum,

first switch means, actuator means, for operation of the switch means,

means joining the actuator means to the pendulum, for operation of the first switch means with relative rotative movement between the pendulum and the vessel,

second switch means,

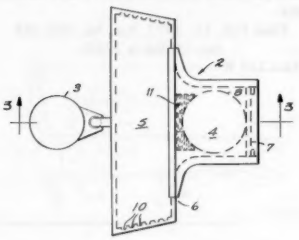
means for operation of the second switch means with pivotal movement of the fin member.

3,842,778

PARACHUTE EQUIPMENT

Jitsu Shibata; Naohumi Murao; Haruhiko Mishina, and Keiichi Nakayama, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1973, Ser. No. 351,616
Int. Cl. B63b *21/48*
U.S. Cl. 114—209 **1 Claim**



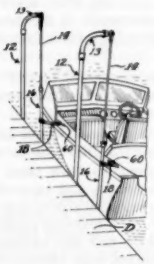
1. A parachute equipment comprising a box body having formed therein a parachute storage compartment provided with an openable door and a cocoon-shaped parachute cable storage compartment, a parachute stored in said parachute storage compartment in a folded form to be ejected therefrom outboard as said door is opened, and a parachute cable stored in said parachute cable storage compartment in the form of a stack of turns each in the shape of numeral **8** along grooves formed in the inner wall of said compartment and having one end connected to said parachute and the other end to an anchor stud provided on the deck of a ship.

3,842,779

BOAT MOORING AND GUARD DEVICE

Harry E. Jaynes, 616 N. Old Rand Rd., Lake Zurich, Ill. 60047

Filed Oct. 13, 1971, Ser. No. 188,892
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 **6 Claims**



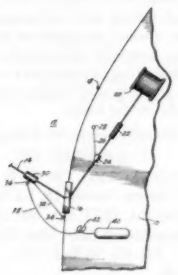
1. A device of the character described comprising a frame member of a generally bow-shaped configuration in which the opposite ends of the frame member are in vertical alinement, a flexible cable or the like stretched taut between and secured to the opposite end of the frame member, said frame so constructed that the opposite ends will flex slightly and will be pulled inwardly in a direction towards each other when said flexible cable is tensioned, means for securing the frame member in a vertical position to a dock or the like so that the cable is vertically positioned and extends outwardly of the dock substantially the same distance along the length of the cable, a tubular member vertically slidable on said cable along substantially the length of said cable, a flexible connector attached to said tubular slidable member, said tubular slidable member being attachable to a boat by means of said flexible connector whereby when the boat moves in the water due to the action of the water it will through said flexible connector move toward and away from said slidable tubular member and said flexible vertical cable, and when the boat bears against any portion of said tubular slidable member the tubular slidable member will move up and down relative to the cable with the movement of the boat and prevent scuffing and damage to the contacting surfaces of the boat, and the frame member and cable will be tensioned to absorb the shock and impact produced by the contacting boat.

3,842,780

SYSTEM AND METHOD FOR BUOYING THE END OF A WIRE MOORING LINE

Grant H. Allens, and Billie L. Perkins, both of Los Angeles, Calif., assignors to Global Marine Inc., Los Angeles, Calif.

Filed Jan. 5, 1973, Ser. No. 321,460
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 **15 Claims**



1. Apparatus for buoying a cast off mooring line comprising a receptacle defining a conical bore therethrough of minimum diameter greater than the diameter of the mooring line for loosely fitting around the mooring line to allow normal in and out movement therethrough of the mooring line relative to the vessel through the receptacle bore,

means for connecting a buoy to the receptacle,

a collar member arranged for surrounding the mooring line and, when disposed to surround the mooring line, for defining a bore therethrough of minimum diameter greater than the diameter of the mooring line for loosely fitting around the mooring line to allow normal in and out movement of the mooring line relative to the vessel through the bore in the surrounding collar member, and a clamping member insertable into the bore of the collar member, when disposed to surround the mooring line, to cooperate between the mooring line and the collar member for fixing the collar member to the mooring line,

the collar member being sufficiently small in diameter to pass, when fixed to the mooring line by the clamping member, through a fairlead, chock or the like with the mooring line,

the collar member, when disposed to surround the mooring line, having a conical exterior configuration arranged in cooperation with the conical configuration of the receptacle bore for self-engagement of the collar member in the receptacle bore, irrespective of the angular relationship between the collar member and the receptacle, in response to the mooring line being payed out through the receptacle bore after the collar member is fixed to the mooring line by the clamping member.

3,842,781

APPARATUS FOR LASHING A PUSHER WITH A BARGE

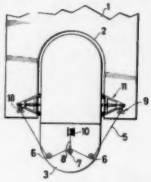
Keizo Kikui, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Chuoku, Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,698

Claims priority, application Japan, Dec. 14, 1972, 47-143385

Int. Cl. B63b 21/00

U.S. Cl. 114—230 1 Claim



1. An apparatus for lashing a pusher with a barge comprising a pair of arms provided on board sides of said pusher, each of said arms being supported to be rotated about a horizontal shaft, having a sliding rod, and having a hydraulic cylinder to project said sliding rod from the end of the arm, means for rotating said arm about the horizontal shaft, a pulley provided on the end of said sliding rod, an actuating rope passing through said pulley, a winch provided on the arm for winding the actuating rope, a weight connected to the end of the actuating rope, a lashing rope connected to said weight, means on the pusher for winding said lashing rope, and a bitt for engaging said weight on the barge.

3,842,782

INTERCONNECTION OF TWO CRAFT

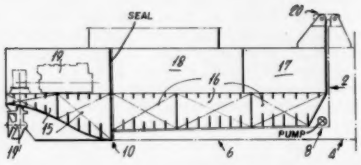
Luigi Cuttica, Via Vittoria Veneto 19, La Spezia, Italy

Filed Mar. 13, 1972, Ser. No. 233,971

Claims priority, application Italy, Mar. 15, 1971, 12572/71

Int. Cl. B63b 21/56

U.S. Cl. 114—235 R 7 Claims



1. An assembly of two craft comprising:

a. a pair of craft, one being a pusher craft and the other being a barge,

b. said barge having a cavity being formed by a bow portion, a pair of sides extending rearwardly of said bow portion and a bottom, said cavity being open at the stern end of said barge, and being of a size sufficient to accommodate a front end portion of the pusher craft, the pusher craft having a transverse wall portion extending outwardly from the sides and bottom thereof at substantially amidships, said front end portion of said pusher craft resting firmly on the bottom of the cavity,

c. positioning tanks in at least one of the craft for facilitating joining the two craft,

d. means for water sealing the two craft together relative to the surrounding sea, the sealing means being positioned at the stern end of the barge and comprising a surface at the extreme rearward end of each of the pair of sides and the bottom, said surface being transverse to the open end of the cavity, and abutting said transverse wall portion of said pusher craft when said front end portion of said pusher craft is within said cavity,

e. means for draining the residual water in the cavity after the joining of the craft to obtain increased adherence between the two craft.

3,842,783

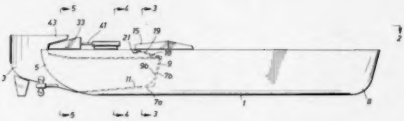
OCEAN GOING INTEGRATED TUG-BARGE CONNECTION SYSTEM

David B. Waller, 10611 Cypresswood Blvd., Houston, Tex. 77070, and Raymond A. Forker, 915 Water Ave., Savannah, Ga. 31404

Filed Feb. 15, 1973, Ser. No. 321,355

Int. Cl. B63b 21/00

U.S. Cl. 114—235 R 3 Claims



1. An apparatus for guiding a first vessel into contacting relation with a second vessel and for fixedly releasably coupling the vessels to one another comprising:

a notch area in the stern of said second vessel which is adapted to receive the bow of said first vessel,

a first guide means extending longitudinally outwardly in cantilever manner over said notch area from said second vessel toward said first vessel,

second guide means being characterized by a recess in said first vessel and disposed in operating alignment with said first guide means,

said first guide means comprising cooperating side walls extending in converging relation to one another toward their cantilever end, when viewed in the horizontal plane, said recess of the second guide means being defined by a pair of side wall means, said pair of recess side wall means being divergent to one another from the recess depth to the recess opening end when viewed in the horizontal plane so that after approach and upon entry of the first guide into the second guide means there occurs a continuous increasing centering effect upon the bow of said first vessel in the stern notch of the second vessel prior to actual final positioning of the first vessel in the second vessel,

the first guide means on said second vessel including an underside wall means to vertically restrain and secure the first vessel in the second,

the notch area in said second vessel having a ramp means substantially covering the bottom thereof, said ramp means sloping upwardly from stern to bow, said ramp means further receiving and supporting the first vessel thereon so that during receipt of said first vessel into the notch area, the bow of said first vessel is driven upwardly by said ramp means and into wedging contact with said underside wall means; said walls of said first and second guide means thus cooperating to align the first vessel with the second vessel as upward wedging contact is produced in the vertical plane by said ramp means prior to coupling,

wedge means mounted on the deck of said second vessel proximate the stern thereof,

wedge receiving means fixedly mounted on the first vessel proximate the stern thereof,

said wedge means being movable into and out of engaging relationship with said wedge receiving means,

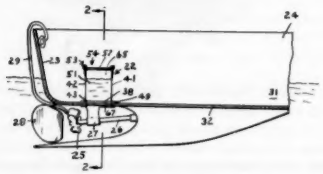
said wedge means and wedge receiving means being arranged so that, upon actuation thereof, the first vessel may be disengaged from the ramp means and underside wall means in the notch area of the second vessel.

3,842,784

SEALED, UPSTANDING, CLOSED, PROPELLER WELL FOR POWER BOATS

Mellin G. Nelson, 50 Shortell Ave., Beverly, Mass. 01915

Filed Feb. 17, 1972, Ser. No. 227,033
Int. Cl. B63h *1/28*
U.S. Cl. 115—.5 R **1 Claim**



1. In combination:
a power boat having a waterline, a central keel, an inclined hull bottom on each opposite side of said keel, and a propeller aligned with said keel and extending below the rear of said hull bottom;
said hull bottom having a rectangular hole in one of said inclined hull bottoms proximate said propeller;
a propeller well comprising a well housing having an upstanding wall of predetermined height extending well above the level of said water line, having a lower end with a projecting integral flange affixed to the inside of said hull bottom and around said hole in a water tight manner and having an opening at the upper end thereof defined by a rim of said upstanding sidewall at a level well above said water line,
said upstanding wall and opening being of rectangular configuration,
a rectangular clamping ring on the outside of said hull bottom, cooperable with said integral flange and sealingly clamped thereto around the edges of said hull bottom to prevent admission of water,
said upstanding wall being vertical but the lower end thereof at said flange being inclined to conform to the incline of said hull bottom;
a rectangular cover over the opening at the upper end of said housing connected by a central rod to a rectangular filler plate at the lower end thereof, said cover, rod and plate being withdrawable as a unit,
and locking means on the upper end of said housing for locking said cover, rod and plate in position to prevent buoyancy, water pressure and hydraulic head from dislodging the same from said housing.

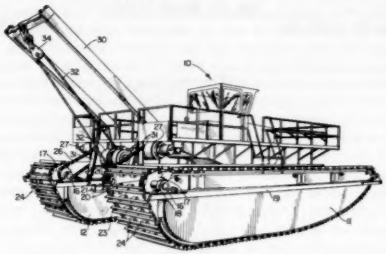
3,842,785

AMPHIBIOUS MARSH CRAFT

Huey Joseph Rivet, 6901 River Rd., Waggaman, La. 70094

Filed Aug. 30, 1973, Ser. No. 391,811
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **7 Claims**

1. An amphibious craft comprising a pair of spaced elongated pontoons, each pontoon comprising a primary buoyant closed wall structure having a top and bottom and having a substantially uniform vertical height over at least half its length measured from rear to front, vertical bulkheads spaced along the length of said pontoons adding rigidity to the pontoon and defining a plurality of separate buoyant chambers within the pontoon, a plurality of spaced I-beams welded to the bottom of the pontoons transversely of the pontoons between said vertical bulkheads over the length of said pontoon, at least two primary channel means on the top and bottom of the pontoon, endless drive chains carried in each of said channel means, channel shaped drive cleats secured to and extending between said chains, plastic support blocks secured to the



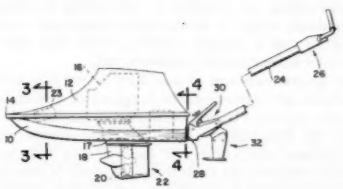
web of said cleats intermediate the drive chains and positioned to bear against the top and bottom of each pontoon, drive means for driving said endless chains, and I-beam spacer means welded to said pontoons at the top of and rigidly interconnecting said pontoons fore and aft in substantially parallel relation.

3,842,786

WATER-SKI TOWING DEVICE WITH ATTITUDE CONTROL

Miroslav Uroshevich, 2505 Fleetwood Ave., Cincinnati, Ohio 45211

Filed Jan. 2, 1974, Ser. No. 429,528
Int. Cl. A63c *11/10*
U.S. Cl. 115—6.1 **16 Claims**



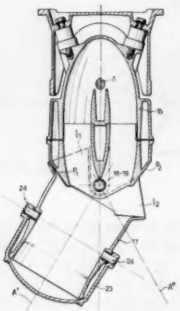
1. A water-ski towing device movable across water, said device comprising:
a bouyant hull having a bow and a stern;
a propulsion unit supported by said hull for accelerating water to provide a propulsive force for said hull;
an aft extending operator-gripped tow bar assembly pivotally including a tow bar mounted to said hull and displaceable between a generally horizontal and an elevated position;
means positioned beneath said hull and aft of said propulsion unit and displaceable between a first position for directing water flow in a direction producing a reaction force urging said hull toward a negative pitch and a second position for directing water flow in a direction producing a reaction force urging said hull toward a lower pitch; and
means connected between said tow bar assembly and said flow-directing means for displacing said flow-directing means in response to pivoting of said tow bar between said horizontal and said elevated positions.

3,842,787

WATER JET IMPELLOR UNIT HAVING A STEERING CONTROL DEVICE

Dante Giacosa, Turin, Italy, assignor to Sira Societa Industriale Ricerche Automotorische, Turin, Italy

Filed May 8, 1973, Ser. No. 358,231
Claims priority, application Italy, May 15, 1972, 68514/72
Int. Cl. B63h 11/10
U.S. Cl. 115—16 5 Claims



1. In a water jet impellor unit for an outboard motor, of the type comprising a duct, and

means for impelling water along the said duct, the improvement comprising:

an angularly adjustable nozzle at the downstream end of the said duct,

means pivotally mounting the said nozzle for angular movement about a substantially vertical axis,

a main nozzle outlet at the downstream end of said nozzle and two subsidiary nozzle outlets, one on either side, at the upstream end of said nozzle,

a baffle movably mounted on said nozzle and means for controlling the position of said baffle between a first position, where it substantially closes said main nozzle outlet and a second position where said main nozzle outlet is substantially unobstructed,

said downstream end of said duct having side surfaces inclined with respect to the longitudinal axis of said duct, said subsidiary nozzle outlets being inclined with respect to the longitudinal axis of said main nozzle outlet and disposed adjacent to said inclined side surfaces on said duct whereby the cross section of each of said subsidiary nozzle outlets is variable in dependence on the angular position of said nozzle so that when said baffle is in said first position the resultant thrust from the water passing out through said subsidiary nozzle outlets is aligned with said longitudinal axis of said main nozzle outlet and in the reverse direction when said nozzle is in the straight ahead position and has a lateral component when said nozzle is inclined at an angle with respect to said straight ahead position.

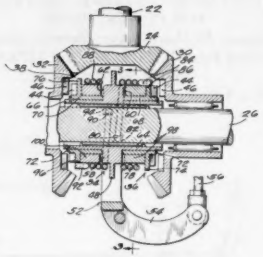
3,842,788

REVERSIBLE TRANSMISSION

Raymond A. Kroll, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 30, 1973, Ser. No. 393,008
Int. Cl. B63h 5/12; F16h 3/38
U.S. Cl. 115—34 R 10 Claims

1. A marine propulsion device comprising a lower unit having a rotatably mounted drive shaft provided with a driving gear, a propeller shaft rotatably mounted in said lower unit and carrying a propeller, a drive gear rotatably carried on said propeller shaft and disposed in meshing engagement with said driving gear, a propeller shaft drive means carried on said propeller shaft for axial movement relative to said propeller shaft and for common rotation with said propeller shaft, a clutch dog mounted on said propeller shaft drive means for rotation relative thereto and for common axial movement with said propeller drive shaft means into a position drivingly connecting said clutch dog with said drive gear for common rotation, means for selectively moving said propeller shaft drive means axially on said propeller shaft to move said clutch dog relative to said position, and means for connecting said clutch dog to said propeller shaft drive means for rotation of said drive means in response to rotation of said clutch dog.

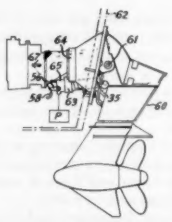


3,842,789

HYDRAULIC TRIM/TILT SYSTEM FOR OUTBOARD PROPULSION UNITS

Karl Abdon Bergstedt, Goteborg, Sweden, assignor to AB Volvo Penta, Goteborg, Sweden

Filed Dec. 20, 1972, Ser. No. 317,062
Claims priority, application Sweden, Dec. 21, 1971, 16407/71
Int. Cl. B63h 5/12
U.S. Cl. 115—41 HT 8 Claims

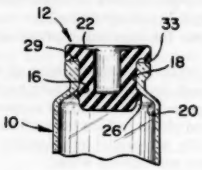


1. A hydraulic system for trimming and tilting of outboard drive units for boats, comprising pump means adapted to deliver hydraulic liquid from a liquid sump to a double acting cylinder-piston assembly, said cylinder-piston assembly being arranged between said tiltable drive unit and the boat or a stationary part of the drive, characterized by a valve unit, said valve unit being adjustable between a first position and a second position and comprising means for connecting said pump means to the chamber at the piston rod end of the cylinder and to the chamber at the piston end of the cylinder when said valve unit is in said first position to tilt said drive unit and for disconnecting said chamber at said piston rod end of said cylinder from said chamber at the piston end of said cylinder and for connecting said chamber at said piston rod end of said cylinder with said sump when said valve unit is in said second position to trim said drive unit, and manual control means for adjusting said valve unit between its said positions.

3,842,790
CONTAINER CLOSURE

James A. Clark, Mendon, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed July 12, 1972, Ser. No. 270,905
Int. Cl. B65d *39/04, 39/16*
U.S. Cl. 215—228 **6 Claims**



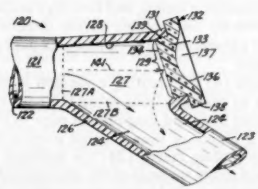
1. An article having a generally cylindrically shaped opening extending from a lip to an internal shoulder and a closure member formed of material having elastic properties for sealing said opening, said closure member having an axis and including a cap portion having a first diameter and an integral neck portion having a second diameter, said first diameter being greater than said second diameter, said cap portion including a top surface and a lip engaging portion, said top surface being axially spaced from said lip engaging portion, said neck portion extending along said axis from said lip engaging portion to a bottom surface, said closure member further including an outwardly extending endless bead and an open ended cavity, said bead located on said neck portion between said lip engaging portion and said bottom surface, wherein said improvement comprises:

said bead being axially spaced from said lip engaging portion a distance which is less than the distance from said lip to said shoulder, said cavity extending from said top surface into said neck portion to the approximate axial position of said bead to thereby provide said closure member with a closed bottom extending from the approximate axial position of said bead to said bottom surface, the relationship between said bead and said closed bottom permitting, when said closure member is properly received within said opening, at least a portion of said neck portion to be in tension to thereby hold said bead in engagement with said shoulder and said lip engaging portion in engagement with said lip.

3,842,791
PARTICLE FLOW MONITOR

Robert J. De Brey, 4502 Browndale Ave., Minneapolis, Minn. 55424

Continuation-in-part of Ser. No. 37,157, May 14, 1970, Pat. No. 3,674,316. This application July 3, 1972, Ser. No. 268,538
Int. Cl. G08b *3/02*
U.S. Cl. 116—67 R **17 Claims**

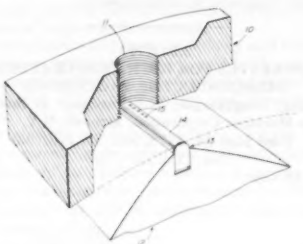


1. An apparatus for sensing particles in a flowing fluid comprising: first means having a passage for carrying fluid; second means having a second passage for carrying fluid; connecting means joining the first means with the second means, said connecting means comprising a housing having an inside wall surrounding a chamber open to the first passage and a second passage whereby fluid and particles flow through said chamber, said housing having an inlet opening in communication with the first passage and an open end opposite the inlet opening, said inside wall of the housing tapers outwardly whereby the chamber increases in size as a function of distance from the inlet opening into the chamber, particle sensing means located across the open end of said chamber opposite the inlet opening for producing audio signals related to the amount of particles which hit the sensing means, said sensing means comprising a member having at least one enclosed cell, a first particle impaction surface located adjacent one side of and facing the chamber whereby said first surface does not interfere with the flow of fluid and particles through said chamber, a portion of said particles flowing through said chamber hit said first particle impaction surface producing the audio signals, and a second surface located outside the chamber, said enclosed cell being located between said first surface and said second surface.

3,842,792
SEAL WEAR INDICATING MECHANISMS

Louis C. Souther, 429 York St., Canton, Mass. 02021

Filed Sept. 4, 1973, Ser. No. 394,382
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 Q **9 Claims**



1. A mechanism for determining the apex seal wear of the rotor of a rotary internal combustion engine comprising: means, incorporated in the wearing surface of said apex seal, for indicating the accumulated wear thereof; said means being so located in said apex seal that, upon removal of one of the engine spark plugs and aligning said apex seal with the resulting hole in the rotor housing, said means becomes visible through said hole.

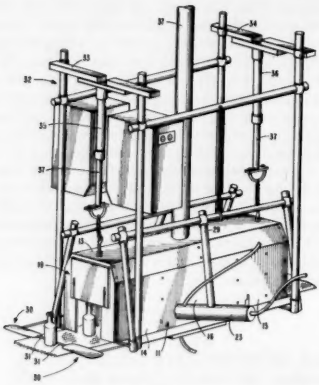
3,842,793
NON JAMMING BAFFLED COATING HOOD

Michael A. Novice, Elmira, and Arthur D. Heller, East Hornesheads, both of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 14, 1972, Ser. No. 280,377
Int. Cl. B05c *11/16*
U.S. Cl. 118—4 **15 Claims**

1. In a coating hood adapted to minimize fluid movement between an enclosed coating area and the environment surrounding same, said hood being provided with imperforate sidewalls, an imperforate top wall extending therebetween and opposite end sections including end walls having appropriate openings to accommodate the passage therethrough of articles to be coated and a central section defining a coating area, said hood further being movably positioned immediately above a conveyor for transporting articles thereto and therethrough

and so positioned by lifting means located above and connected to the hood, said lifting means comprising a supporting frame member and a support means affixed to said hood such that vertical movement may be imparted thereto, said hood



further including a plurality of fins positioned internally thereof and along the sidewalls of each section thereof, said fins extending inwardly from said sidewalls in a direction substantially transverse to such sidewalls.

3,842,794

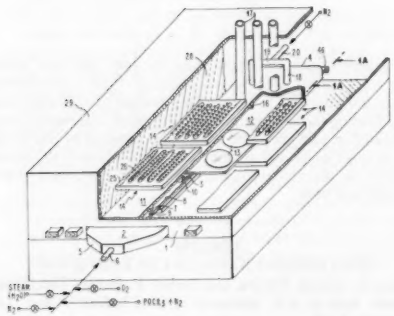
APPARATUS FOR HIGH TEMPERATURE SEMICONDUCTOR PROCESSING

Paul W. Ing, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,190

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 **8 Claims**



1. A furnace for processing semiconductor wafers comprising:

A. a rectangular quartz tube having opposed top and bottom horizontally planar walls transparent to radiant heat with

a. the internal height between said walls being in the range of about 3/16 to about 1 inch,

b. the internal width between the side walls of said tube being in the range of about 1⅓ to about 20 inches, with

B. a support plate opaque to radiant heat slidably insertable and removable into and from said tube in parallel relationship to said top and bottom walls and having a vertical thickness in the range from about one sixteenth to about one fourth inches for supporting said wafers planarly equidistant from said top and bottom with

a. the top surface of said wafers disposed in parallel relationship to said top and bottom walls and at a distance in the range of about one eighth from said top wall to about three fourths inch;

b. the ratio of said distance to said width being in the range of about 1:1 to about 1:25;

C. gas inlet means for injecting a processing gas in said tube;

D. gas diffuser means for constraining an injected gas in even flow through and across said tube having at least one said wafer disposed therein on said support;

E. first and second planar radiant heat diffuser means juxtaposed externally in parallel relationship on respective ones of said top and bottom walls;

F. means for heating said first and second diffuser means to radiant heat;

G. an insulating mass of about 15 to about 34 pounds surrounding said tube and said elements E and F with said mass having a thermal conductivity of in the range of about 0.08 to about 0.11 Btu/Hr-Ft-° F.

3,842,795

SEALING AND TRANSPORT MEANS FOR CORRUGATED PAPERBOARD IMPREGNATING APPARATUS

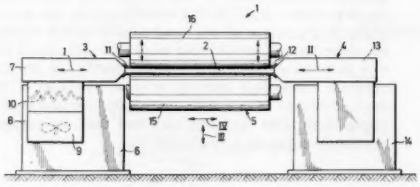
Gunther Lau, Glogauer Str. 22, 8541 Katzwang; Edmund Bradatsch, Huttenwerkstr. 5, 8481 Weiherhammer, and Hermann J. Brandl, Virchowstrasse 33, 85 Nurnberg, all of Germany

Filed Jan. 8, 1973, Ser. No. 321,839

Claims priority, application Germany, Jan. 14, 1972, 2201741

Int. Cl. B05b *13/06*

U.S. Cl. 118—50 **8 Claims**



1. Apparatus for impregnating horizontally transported corrugated paperboard containing a succession of transversely extending flutes, comprising

a. impregnate supplying means (**3**) for supplying impregnate to the ends of the paperboard flutes along a first longitudinal edge of the advancing paperboard, said impregnate supplying means including first edge sealing means (**23**) for sealingly engaging the upper and lower surfaces of the paperboard immediately adjacent said impregnate supplying means, said first edge sealing means being transversely displaceable to the direction of advance of the paperboard to accommodate paperboard of varying widths:

b. suction means (**4**) for creating a vacuum in the paperboard flutes by sealingly connecting the ends of the paperboard along a second longitudinal edge of the paperboard with a source of vacuum, said suction means including edge sealing means (**36**) for sealingly engaging the upper and lower surfaces of the paperboard immediately adjacent the second longitudinal edge of the paperboard, said second edge sealing means being displaceable transversely to the direction of advance of the paperboard to accommodate paperboard of varying widths;

c. sealing and transport means (5) for sealing predetermined portions of the upper and lower surfaces of the paperboard to inhibit air from being drawn into the paperboard flutes and for advancing the paperboard relative to and in sealing engagement with said impregnate supplying and suction means; and

d. displacement means for displacing said sealing and transport means transversely to the direction of advance of the paperboard to maintain the spacing between said sealing and transport means and said second edge sealing means below a predetermined maximum, whereby the amount of air drawn into the flutes adjacent the edge sealing means is maintained below a predetermined amount regardless of the width of the paperboard being impregnated.

3,842,796

APPARATUS FOR TREATING MATERIALS

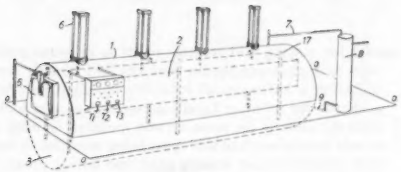
Edward Austin Hilditch, Frome, and Charles Arnold Nightingale, Bognor Regis, both of England, assignors to Cuprinol Limited, Somerset, England

Filed Jan. 29, 1973, Ser. No. 327,460

Claims priority, application Great Britain, Feb. 7, 1972, 5676/72

Int. Cl. B05c *11/10*

U.S. Cl. 118—50 **5 Claims**



1. Apparatus for the treatment of wood, textiles, rope and cordage, which apparatus comprises: a treatment chamber having a lower part for containing a treating liquid, and an upper part; a support for material to be treated; means connected to said support for moving said support from the upper to the lower part of the treatment chamber, so as to immerse material on the support in a treating fluid entrained in the lower part of the treatment chamber and for returning the support to the upper part of the treatment chamber; a port in said treatment chamber for access to the upper part of the treatment chamber for loading material onto and unloading material from, the support when the support is in the upper part of the treatment chamber; means coupled to said treatment chamber for altering the pressure within the treatment chamber relative to ambient pressure; a holding tank for holding a reserve supply of treatment liquid; and an amplifying vessel coupled between the holding tank and the treatment chamber, said amplifying vessel being of small horizontal cross-section relative to the treatment chamber, and having a capacity at least equal to the largest volume of treatment liquid to be consumed in a single operation of said apparatus; means operatively coupled for transferring a measured amount, within said largest volume, of treatment liquid from said holding tank through said amplifying vessel and into said treatment chamber; means operatively coupled for transferring, after completion of the treating operation, the remainder of said measured amount from said treatment chamber to said amplifying vessel; and means operatively associated with said amplifying vessel for indicating the amount of liquid consumed by said treating operation.

3,842,797

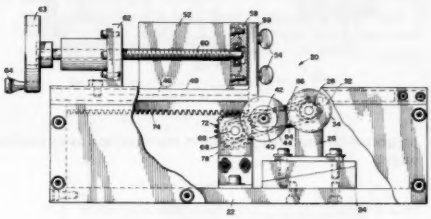
CODE LABELING DEVICE

Carl D. Hellenberg, Racine, Wis., assignor to Porelon, Inc., Racine, Wis.

Filed May 15, 1972, Ser. No. 253,143

Int. Cl. B05c *1/02*

U.S. Cl. 118—222 **10 Claims**



1. A device for coding package labels of the type having ink-applying elements for placing inked indicia on labels, said device comprising:

a base;

means attached to said base for gripping a stack of labels, said means including clamp elements defining parallel planes of stack contact to orient a stack of labels surface-to-surface with evenly aligned edges, said means defining an access opening therealong through which a tight, flat surface of edges may be exposed;

means attached to said base for holding said ink-applying elements at said access opening, said holding means having a plurality of holding locations spaced along its length, across said access opening, for said ink-applying elements;

a lesser plurality of said ink-applying elements arranged along substantially the entire length of said holding means at certain of said holding locations according to code, each of said ink-applying elements secured at one of said holding locations, said ink-applying elements being across said access opening;

an ink impregnated ink supply structure mounted to said base in position to contact said ink-applying elements to supply ink thereto;

means to facilitate relative movement of said ink-applying elements in contact with said ink supply structure; and

means to facilitate relative movement of said stack gripping means with respect to said ink-applying elements, said relative movement being in a direction transverse said planes and said edges,

whereby labels may be marked with coded indicia which are clearly discernible to those aware of their presence yet are inconspicuous to those unaware of their presence.

3,842,798

SHROUD FOR SPRAYING APPARATUS

Albert F. Gerlovich, Fanwood, N.J., assignor to Rheem Manufacturing Company, New York, N.Y.

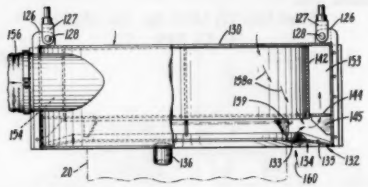
Division of Ser. No. 126,201, March 19, 1971, Pat. No. 3,741,149. This application Jan. 16, 1973, Ser. No. 324,201

Int. Cl. B05c *1/00*

U.S. Cl. 118—326 **9 Claims**

1. A shroud for engagement over the end of a body being sprayed comprising inner and outer shells radially spaced and having transverse partitions between them to define a fluid space, a suction conduit with an outlet from said fluid space, fluid passage means connecting the area around the body end

to said fluid space including a plurality of spaced flow openings through one of said transverse partitions, said openings



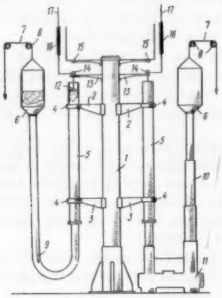
progressively increasing in size in the direction away from said outlet.

3,842,799

APPARATUS FOR THE APPLICATION OF LIQUID CORROSION-PREVENTIVE COMPOUND TO THE INNER SURFACE OF PIPES

Evgeny Nikolaevich Podkletnov, Smolensky bulvar, 6-8, kv. 144, Moscow, U.S.S.R.

Filed Mar. 10, 1972, Ser. No. 233,550
Int. Cl. B05c *11/10*
U.S. Cl. 118—408 **3 Claims**



1. A device for the application of a layer of a liquid corrosion-preventive compound to the inner surface of a pipe comprising: means for holding the pipe in an inclined or vertical position; a container provided with a liquid corrosion-preventive compound; means connecting said container with the lower end of the pipe; a driven hoisting mechanism operably coupled to said container for moving said container up and down with relation to the pipe; and a float valve accommodated inside the pipe and means linking said float valve with the drive of said hoisting mechanism, the arrangement being such that said valve switches the drive for lowering said container as soon as the valve is acted upon by the liquid compound rising inside the pipe.

3,842,800

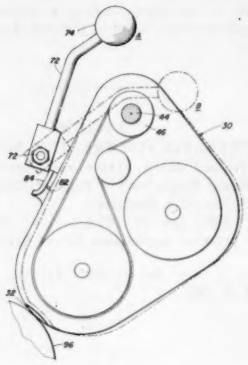
TRANSFER ROLLER ASSEMBLY

Daniel Hoffman, Rochester, and Thomas Meagher, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,289
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **2 Claims**

1. An improved electrostatographic machine having a photoconductive member, the improvement comprising:

a transfer roller assembly mounted for rotation within said machine, said assembly including end members each having groove means formed therein, a transfer roller rotatably mounted to said end members, a mounting shaft parallel to said transfer roller and rotatably mounted to said end members, bearing means for mounting said mounting shaft within said machine, said assembly being adapted to rotate about the axis of said mounting shaft, said transfer roller being disposed adjacent said photoconductive member,



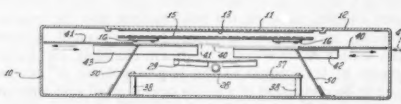
means for placing said transfer roller in pressure contact with said photoconductive surface, said placing means including a locking shaft rotatably mounted parallel to said transfer roller, a handle connected to said locking shaft for rotating the same, an arm mounted on each side of said handle, each of said arms being mounted to rotate with respect to said locking shaft and having means for engaging one of said groove means, and a spring mounted on each side of said handle, each of said springs being disposed around said locking shaft and having one end fixed so as to rotate with said locking shaft when the latter rotates while the other end is affixed to one of said arms.

3,842,801

ELECTRON RADIOGRAM DEVELOPER WITH IMAGE FIELD SCREEN

Ray W. Larson, Santa Monica; Arthur Lee Morsell, Tarzana; Eric P. Muntz, Pasadena, and Murray S. Welkowsky, Los Angeles, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Aug. 24, 1972, Ser. No. 283,311
Int. Cl. G03g *13/00*
U.S. Cl. 118—638 **4 Claims**



1. In a powder cloud developer having a developing chamber, means for producing a cloud of charged toner powder particles in the chamber, and means for supporting in the chamber a receptor sheet having an electrostatic image, the improvement comprising in combination:

an apertured image field plate mounted in said chamber adjacent said receptor sheet;

a charge selection electrode mounted in said chamber, with said particle cloud produced between said plate and electrode;

means for producing an electric field between said plate and electrode for attracting particles of one polarity to said electrode and particles of the opposite polarity to said plate, with the charge on said sheet attracting said particles of opposite polarity through the plate apertures to said sheet;

a shutter mounted in said chamber between said plate and electrode and adjacent said plate; and

means for moving said shutter between a closed position blocking said cloud of particles from said plate and an open position permitting movement of particles to said plate.

3,842,802

MARKER FOR USE IN THE DETECTION OF OESTRUS IN ANIMALS

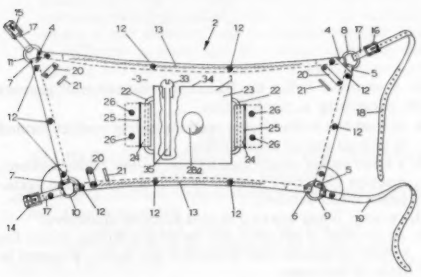
Douglas R. Lang, and Graeme K. Hight, Whatawhata Country, both of Hamilton, New Zealand

Continuation-in-part of Ser. No. 822,266, May 6, 1969, abandoned. This application May 22, 1973, Ser. No. 362,763

Claims priority, application New Zealand, May 10, 1968, 152488

Int. Cl. A01k *67/00*

U.S. Cl. 119—1 **9 Claims**



1. A marker for use in the detection of oestrus in animals, including a closed container for holding a marking substance, said container having an outlet opening, a means for effectively sealing said opening and transferring said marking substance including a ball mounted for rotation in the opening, and a spring means biasing the ball in position in the opening yet allowing the ball to be rotated in the opening, means for mounting said container on a male animal in position for transferring said marking substance comprising a harness having a base member for attachment to a male animal, means attaching the container to the base member, adjustable strap means on the base member, one of said strap means encircling the animal's head rearwardly of the mouth and the other strap means behind the ears, with the base member and container being located on the throat area below the animal's chin, whereby during copulation or at about the time of copulation with a female animal, the ball will contact an appropriate part of the female animal's body for causing marking substance in the container to be transferred therefrom onto the skin or hair of the female animal.

3,842,803

PET COMMODE

Franklin Temel, 1050 N.E. 91st Ter., Miami Shores, Fla. 33138

Filed July 3, 1973, Ser. No. 376,224

Int. Cl. A01k *29/00*

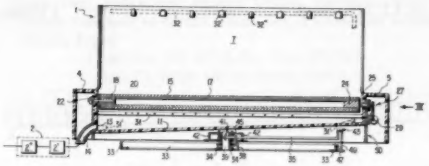
U.S. Cl. 119—1 **17 Claims**

1. A pet commode comprising in combination:

a. a housing having opposed front and rear walls, opposed side walls, and a bottom recessed below the upper extremities of said side walls and provided with an outlet passage;

b. means located in said housing and defining a floor for supporting a pet and receiving its bodily waste products, said floor being mounted for pivotal movement about a substantially horizontal axis for permitting waste products deposited on said floor to fall onto said housing bottom surface;

c. water spray means located in said housing for directing water sprays against said floor, whereby the surface of said floor which receives waste products is struck by such sprays when said floor undergoes such pivotal movement;



d. controllable water delivery means connected to said spray means for delivering water thereto;

e. controllable drive means connected to said floor for imparting such pivotal movement thereto; and

f. control means connected to said water delivery means and to said drive means and responsive to the departure of a pet from said floor for causing said delivery means to deliver water under pressure to said spray means and for causing said drive means to impart such pivotal movement to said floor.

3,842,804

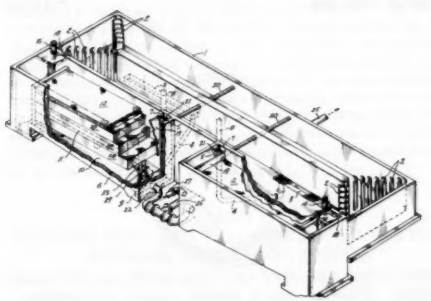
FISH-REARING FACILITY

Bernard J. Christensen, Bellevue, and Harry H. Chenoweth, Kirkland, both of Wash., assignors to Hill, Ingman, Chase & Co., Seattle, Wash.

Filed June 5, 1972, Ser. No. 259,528

Int. Cl. A01k *63/00*

U.S. Cl. 119—3 **8 Claims**



1. In fish-rearing apparatus, including rearing pond means, a filter tank interconnected therewith, and means mounted on the apparatus for transferring water from the rearing pond means to the filter tank and returning it to the rearing pond means, the improvement comprising biological filter means mounted in the filter tank, below the top thereof, and being substantially entirely submerged in water, said filter means including a plurality of tubular passages having their lengths extending upright, and means for supplying flow of water from

the rearing pond means upwardly through said tubular passages of said biological filter means for return to the rearing pond means, said biological filter means being spaced above the bottom of the filter tank for forming a lower chamber to receive debris sloughed from the walls of said tubular passages.

3,842,805

OVERHEAD FEEDER CONVEYOR HAVING DOUBLE-TAPERED BED, REVERSIBLY DRIVABLE CHAIN-FLITE ASSEMBLY

Paul Patz, Pound, Wis.

Filed Sept. 26, 1973, Ser. No. 400,944
Int. Cl. A01k *05/02*
U.S. Cl. 119—52 B **5 Claims**

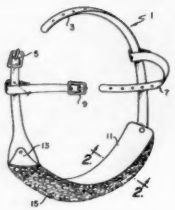
1. A conveyor for distributing feed along a feed bunk located therebelow comprising: a double-tapered bed which narrows widthwise in opposite directions toward opposite ends of said conveyor from a location intermediate said conveyor ends where feed is deposited on said bed; first means comprising a plurality of spaced apart interconnected flites extending transversely over said bed and movable in unison alternately in either direction along substantially the entire length of said bed; and second means for selectively moving said flites in either direction to move feed deposited on said bed at said intermediate location along said bed toward either end of said conveyor from whence it is deposited in said bunk.

3,842,806

PREDATOR PROTECTION COLLAR FOR LIVESTOCK

Roy T. McBride, P.O. Box 725, Alpine, Tex. 79830

Filed Oct. 24, 1973, Ser. No. 409,103
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **7 Claims**



1. An animal collar containing a liquid substance comprising:

means for fastening the collar to the animal;

a sheath attached to said fastening means and having an outer covering resembling the natural surface of the animal in color and feel; and

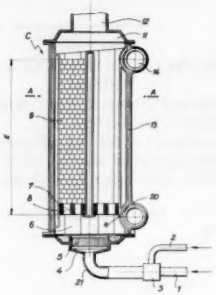
a closed vessel to confine said liquid substance therein adapted to remain within said sheath until ruptured by a predator.

3,842,807

SECTIONAL BOILER FOR FLAMELESS COMBUSTION OF GASEOUS FUELS

Edvin Sittek, Novy Bohumin; Jaroslav Katolicky, Detmarovice; Jaroslav Kuba, Skrecen, and Edmund Dvorok, Novy Bohumin, all of Czechoslovakia, assignors to Hutni druhovyroba, generalni reditelstvi, Praha, Czechoslovakia

Filed Nov. 8, 1973, Ser. No. 414,094
Claims priority, application Czechoslovakia, Nov. 15, 1972, 7718-72
Int. Cl. F22b *7/00*
U.S. Cl. 122—225 R **4 Claims**



1. A sectional boiler for flameless combustion of gaseous fuels, comprising in combination:

a. at least two hollow boiler sections having cavities formed in at least one of their surface,

b. a water jacket constituted by said hollow boiler sections,

c. reaction chambers formed by said cavities in the juxtaposed boiler sections,

d. ceramic filling inserted in said reaction chambers,

e. an air duct, a gas duct and an air-gas mixing device for supplying gaseous fuel mixture to the boiler, arranged in front of the latter,

f. a fuel supply pipe leading from the mixing device to the boiler,

g. a fuel distributor connected to said fuel supply pipe and provided in the fuel inlet part of the boiler,

h. a porous refractory diaphragm in said fuel distributor,

i. a combustion space behind the refractory diaphragm,

j. a spark member for igniting the gaseous fuel in the combustion space and

k. a refractory block provided with apertures accommodated behind said combustion space and in front of said reaction chambers.

3,842,808

REGENERATIVE STEAM IGNITION INTERNAL COMBUSTION ENGINE

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1973, Ser. No. 344,591
Int. Cl. F02m *25/02*; F02p *23/00*
U.S. Cl. 123—25 P **2 Claims**

1. An internal combustion engine comprising means defining a variable volume working and combustion chamber,

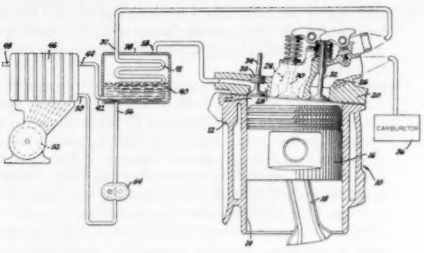
first admission means connected with said chamber and operable to admit air-fuel mixture to said chamber for compression and burning therein,

second admission means connected with said chamber and operable to admit superheated steam thereto upon compression of said mixture, to ignite the compressed air-fuel mixture therein,

exhaust means connected with said chamber and operable to exhaust burned gases therefrom,

an exhaust heat boiler connected with said second admission means to supply superheated steam thereto, said boiler also being connected with said exhaust means to receive exhaust gases therefrom for heating condensate in said boiler to form steam,

a condenser connected with said boiler to receive exhaust gases therefrom for condensation of the water vapor in said exhaust gases, and



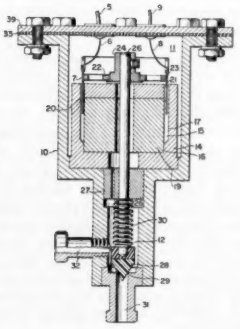
a condensate pump connected between said condenser and said boiler and operative during engine operation to pump condensate from said condenser to said boiler, said components being operative to supply said superheated steam to said chamber near its smallest working volume in sufficient quantity and at a temperature capable of igniting and causing combustion of the compressed lead air-fuel mixtures therein.

3,842,809

FLUID FLOW METERING VALVE FOR INTERNAL COMBUSTION ENGINE

John A. King, Mentor, Ohio, assignor to Cleveland Electronics, Inc., Cleveland, Ohio

Filed Oct. 3, 1972, Ser. No. 294,661
Int. Cl. F02b *3/00;* **F02m** *39/00;* **F16k** *31/02*
U.S. Cl. 123—32 AE **1 Claim**



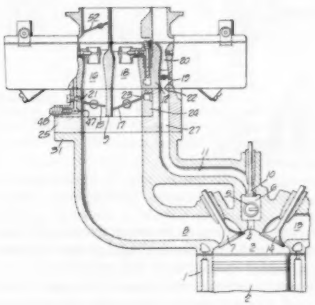
1. The combination of a combustion engine having a fuel conduit means, an electric generating means responsive to conditions of engine operations determining rate of fuel flow to the engine for generating a continuous electrical signal proportional to the magnitude of said conditions, and a fuel metering valve in said conduit means; said valve comprising a casing having two portions, one portion having an inlet port and an outlet port, a valve member controlling flow through said portion; an electro-dynamic motor for actuating said valve member located in the other portion, said motor comprising an annular pole piece element, an annular magnetic means element positioned concentrically with said pole piece element and spaced therefrom to form an air gap, and a moving coil located within said air gap; means connecting said valve member to said moving coil, said connecting means being positioned concentrically with said annular pole piece element and magnetic means element and passing through one of said elements; and a conductor means connecting said moving coil to said electric generating means.

3,842,810

CARBURETOR

Shizuo Yagi, Asaka, and Minoru Atsumi, Kautagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,744
Int. Cl. F02b *19/10, 19/16, 19/18*
U.S. Cl. 123—32 R **11 Claims**



1. A carburetor assembly for use with an internal combustion engine having at least one main combustion chamber and an auxiliary combustion chamber connected thereto by a torch nozzle, said carburetor assembly having, in combination: a main primary passage having a main throttle valve, an auxiliary passage having an auxiliary throttle valve, a supporting shaft for the auxiliary throttle valve, means for connecting the main primary passage to deliver a lean mixture to the main combustion chamber of the engine, means connecting the auxiliary passage to deliver a rich mixture to the auxiliary combustion chamber of the engine, a cam connected to turn in accordance with turning movement of the main throttle valve, a stationary member, a lever pivotally mounted on said stationary member and having a follower cooperating with said cam, and additional cam and follower means whereby turning movement of the auxiliary throttle valve is controlled by pivotal movement of said lever.

3,842,811

ELECTRIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Shinoda, Toyota, and Kunio Endo, Anjo, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotacho, Toyota-shi and Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Continuation-in-part of Ser. No. 53,821, Aug. 10, 1970, Pat. No. 3,719,176. This application Dec. 8, 1972, Ser. No. 313,543
Claims priority, application Japan, July 29, 1969, 44-59801; July 29, 1969, 44-59802
Int. Cl. F02d *5/02*
U.S. Cl. 123—32 EA **4 Claims**

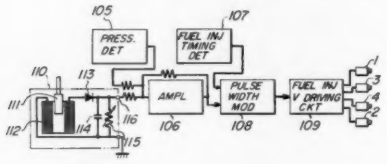
1. An electrical fuel injection control system for an internal combustion engine having electromagnetic means for operat-

ing fuel injection valves of the engine and operative to inject fuel in response to injection pulses each having a pulse width varying as a function of parameters indicative of the condition of said engine comprising:

a permanent magnet signal generator having a permanent magnet linked to the throttle of the engine and an armature coil electromagnetically coupled with said permanent magnet for producing an output voltage responsive to the movement of said permanent magnet;

first circuit means connected between said armature coil and second circuit means for rectifying said output voltage of said armature coil and supplying a current depending on said rectified output voltage to said second circuit means when said output voltage, exceeds a predetermined level;

said second circuit means having a capacitor adaptable to store electricity by said current supplied thereto and a resistor adaptable to discharge said stored electricity for producing a voltage variable signal with discharging of said stored electricity;



pressure signal generating means responsive to the pressure of engine intake manifold of said engine for generating a voltage signal indicative of said pressure;

third circuit means connected to said second circuit means and said pressure signal generating means and including an operational amplifier to add the signal derived from said second circuit means to the signal derived from said pressure signal generating means to produce a signal which varies as a function of the superposition of said voltage variable signal produced by said second circuit means and said voltage signal of said pressure signal generating means;

fourth circuit means connected to said third circuit means for producing a fuel injection pulse signal whose pulse width is determined by said signal produced by said third circuit means;

fifth circuit means connected to said fourth circuit means and said electromagnetic means for driving said electromagnetic means for an interval corresponding to the pulse width of said fuel injection pulse signal.

3,842,812

FOUR-CYCLE INTERNAL COMBUSTION ENGINE WITHOUT A CAMSHAFT

Ernst Marcus, Casilla 258, La Paz, Bolivia

Filed Oct. 16, 1972, Ser. No. 297,928
Int. Cl. F01 *9/02, 25/06*
U.S. Cl. 123—75 RC **5 Claims**

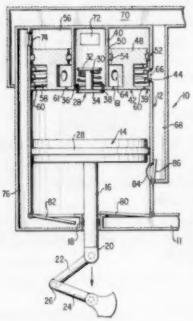
1. In a four-cycle internal combustion engine having at least one cylinder, a piston reciprocable within said cylinder and defining a chamber above said piston and within said cylinder undergoing the intake, compression, power, and exhaust strokes, and a valve configuration designed to operate without a camshaft,

a first chamber upstream from and adapted to communicate with the space within said cylinder beneath said piston for conducting a fresh charge of an air and fuel mixture to said cylinder and into the space beneath said piston,

a second chamber downstream from and adapted to communicate with the space within said cylinder beneath said piston,

first reed valve means between said upstream chamber and space in said cylinder beneath said piston operable in response to differential in gas pressures in said downstream chamber and cylinder below said piston during the compression and exhaust strokes of the operating cycle of said engine for admitting a fresh charge of said fuel and air mixture into said cylinder below said piston during the compression and exhaust strokes of the operating cycle of said engine,

second reed valve means between said downstream chamber and space in said cylinder beneath said piston operable in response to the differential in gas pressures in said cylinder below said piston and downstream chamber during the intake and power strokes of the operating cycle of said engine for transferring the fresh charge of said fuel and air mixture introduced into the space in said cylinder beneath said piston during the compression and exhaust strokes of the operating cycle of said engine into said downstream chamber during the intake and power strokes of the operating cycle of said engine,



inlet valve means in said cylinder above said piston in communication with said downstream chamber operative in response to a first gas pressure differential between said downstream chamber and cylinder above said piston during the intake stroke of the operating cycle of said engine for admitting the fresh charge of air and fuel mixture introduced into said downstream chamber during the previous intake and power strokes of the operating cycle of said engine into said cylinder above said piston, outlet valve means in said cylinder above said piston in communication with said downstream chamber operative in response to a second gas pressure differential between said downstream chamber and cylinder above said piston during the exhaust stroke of the operating cycle of said engine for expelling a burnt charge from said cylinder above said piston,

an exhaust passage in communication with said outlet valve means for receiving said burnt charge expelled from said cylinder, and

a normally closed pressure valve means between said exhaust passage and cylinder adapted to open in response to the pressure in said cylinder at the conclusion of the power stroke of said piston for relieving the gas pressure within said cylinder sufficiently to enable said second gas pressure differential in said downstream chamber to open said outlet valve means in preparation for the scavenging stroke of the engine cycle.

3,842,813
FUEL INJECTION APPARATUS FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES OPERATING ON CONTINUOUSLY INJECTED FUEL

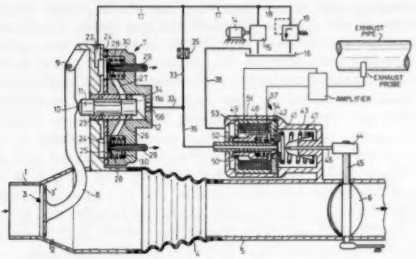
Konrad Eckert, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 18, 1972, Ser. No. 289,841

Claims priority, application Germany, Sept. 17, 1971, 2146506

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 R **3 Claims**



1. In a fuel injection apparatus for the continuous injection of fuel into the suction tube of an internal combustion engine, said suction tube containing an arbitrarily operable butterfly valve, said apparatus being of the known type that has

a. an air sensor member forming part of an air sensor means disposed in said suction tube spaced from said butterfly valve, said air sensor member being deflected by the flow of intake air as a function of the intake air quantities,

b. lever means forming part of said air sensor means and being attached to said sensor member,

c. means generating a return force affecting said air sensor means and opposing the deflecting force of the air flow, said return force being independent from the deflected position of said air sensor member, said means including a pressure chamber filled with pressurized liquid supplying said return force,

d. a fuel metering and distributor valve having a movable valve member exposed to the pressure of said liquid and operatively connected to said lever means to be displaced thereby against said return force to an extent proportionate to the deflection of said air sensor member for maintaining constant the fuel-to-air ratio for any given return force,

e. a control valve means varying said return force, said control valve means having a movable valve member loaded by a primary spring and

f. means varying the bias of said primary spring as a function of at least one engine parameter, the improvement comprising a secondary spring connected to said movable valve member of said control valve means and means for varying the bias of said secondary spring as a function of the air ratio in the exhaust gas of said internal combustion engine, wherein said control valve means is formed as a flat seat valve and its movable valve member is constituted by a diaphragm, and wherein said primary spring exerts a force on one side of said diaphragm and said secondary spring exerts an opposing force on the other side of said diaphragm.

3,842,814
EXHAUST GAS RECIRCULATION SYSTEM

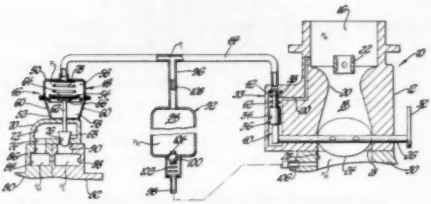
Kenneth C. Bier, Bloomfield Hills, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,346

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **12 Claims**

1. An exhaust gas recirculation system for an internal combustion engine having first conduit means for conducting from said engine at least part of the exhaust gases generated by said engine and second intake conduit means controlled by a variably openable throttle valve for conducting therethrough a flow of atmospheric air to said engine for supporting the combustion process within said engine, said system comprising passage means interconnecting and communicating between said first and second conduit means, variably positionable valve means for controlling the flow of said exhaust gases from said first conduit means through said passage means and into said second conduit means, vacuum responsive motor means operatively connected to said variably positionable valve means for causing said variably positionable valve means



to move in an opening direction in response to an actuating vacuum being communicated to said vacuum responsive motor means, a source of vacuum, third conduit means communicating with said source of vacuum and said vacuum responsive motor means, and variably openable control valve means communicating between a source of ambient pressure and said vacuum responsive motor means, said variably openable control valve means being openable generally in accordance with the degree of opening of said throttle valve, said control valve means being positioned in accordance with the position of said variably openable throttle but free of connection thereto such that sticking of said control valve means in one position could cause sticking of said throttle valve in a corresponding position.

3,842,815
CENTRIFUGAL GOVERNOR FOR CONTROLLING THE RPM OF INJECTION TYPE INTERNAL COMBUSTION ENGINES

Herbert Bechstein, Esslingen; Eberhard Hofmann, Kirchberg, Murr; Hans-Jurgen Jaenke, Ditzingen; Rolf Muller, Stuttgart-Freiberg; Ernst Ritter, Stuttgart, and Heinrich Staudt, Markgroningen-Talhausen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 21, 1973, Ser. No. 362,303

Claims priority, application Germany, May 20, 1972, 2224756

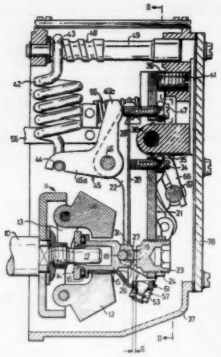
Int. Cl. F02d *1/04*

U.S. Cl. 123—140 R **5 Claims**

1. In a centrifugal governor for controlling the rpm of an injection type internal combustion engine, having a regulating member which is adjustable dependent on the rpm and adapted to have its regulating displacements transmitted to the fuel delivery control means of an injection pump of said engine via at least one intermediary lever, while said member acts upon a force-transmitting lever which is pivotally mounted in a housing of said governor and which is supported on an adjustable abutment means fixedly provided in said housing, and is biassed by means of a regulator tension spring being attached, at its one end, to a first spring seat in said governor housing and engaging, at its other end, a second spring seat provided at said force-transmitting lever, the improvement comprising

a bearing bolt rotatably mounted in said governor housing and having a helicoidal groove serving as said first seat of

said regulator tension spring, said second seat of said regulator tension spring being adjustable, thereby rendering the bias of said regulator tension spring relative to said force-transmitting lever variable.

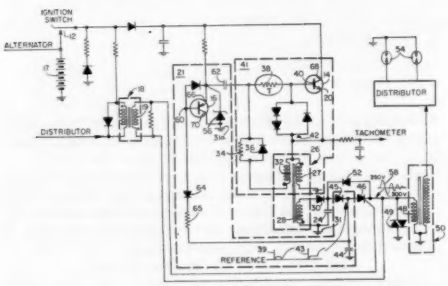


3,842,816

ALTERNATING CURRENT CAPACITOR DISCHARGE IGNITION SYSTEM

Robert J. Vargas, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 14, 1971, Ser. No. 162,579
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **1 Claim**



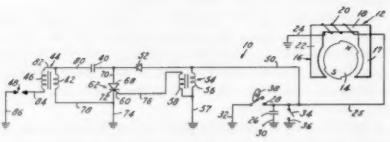
1. In a capacitor discharge ignition system for an internal combustion engine having an ignition capacitor, trigger means for discharging said ignition capacitor in synchronism with the engine to produce ignition pulses, a semiconductor controlled rectifier having a gate, an anode and a cathode, a power transistor for charging said ignition capacitor, said power transistor having control and output electrodes, a transformer having first, second and third inductively coupled windings with the output electrode of said power transistor being coupled to said first winding, circuit means for connecting said second winding to said control electrode of said power transistor with increasing current in said first winding increasing current in said second winding and driving said power transistor into saturation with said ignition capacitor being charged, a first diode and said third winding connected in series and coupled across said ignition capacitor with pulses of one polarity induced in said third winding charging said ignition capacitor, an enabling transistor having control and output electrodes with said control electrode being coupled to said anode of said semiconductor controlled rectifier for activating said transistor, a high voltage transformer having primary and secondary windings and being connected to said cathode of said semiconductor controlled rectifier, a capacitor coupled between said output of said enabling transistor and said control electrode of said power transistor for initiating said power transistor with said enabling transistor being activated, a supply potential coupled to said power and enabling transistors, a zener diode connected between said output electrode of said enabling transistor and a reference potential and poled to prevent changes in magnitude of said supply potential from initiating said power transistor, first diode means coupled between said ignition capacitor and said anode of said semiconductor controlled rectifier for preventing said ignition capacitor from delaying the activation of said power transistor, a capacitor connected between said input of said semiconductor controlled rectifier and said reference potential to filter out turnoff spikes resulting from said power transistor becoming saturated, said filter preventing damage to said semiconductor controlled rectifier, the combination including second diode means coupled between said output of said semiconductor controlled rectifier and said ignition capacitor and poled to create a ringout oscillation between said ignition capacitor and said high voltage transformer thereby causing an alternating current to appear across the spark gap.

3,842,817

CAPACITIVE DISCHARGE IGNITION SYSTEM

Marion Mallory, Jr., Carson City, Nev., assignor to Mallory Electric Corporation, Carson City, Nev.

Filed Aug. 22, 1972, Ser. No. 282,654
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **3 Claims**

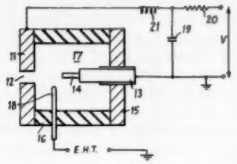


1. A capacitive discharge ignition system for an internal combustion engine comprising a magneto including a winding, a capacitor having one side connected to the magneto winding to be charged thereby, an ignition coil having a primary winding and a secondary winding, the primary winding of the coil being connected between ground and the other side of the capacitor, a controlled rectifier connected between the capacitor and ground from a point on said one side of the capacitor whereby the controlled rectifier, capacitor and primary winding of the coil form a series circuit, a time delay circuit comprising a transformer including primary and secondary windings, said transformer primary winding being connected to the magneto winding, the transformer secondary winding be connected to the gate electrode of the controlled rectifier, the output of said magneto acting to charge the capacitor and pass through the transformer primary winding to develop an electrical field therearound, switch means to start the flow of current from the magneto through the transformer primary winding at a selected point in the operation of the magneto whereby the electrical field thereabout will induce an emf in the transformer secondary winding which will provide a signal to the gate electrode to trigger the controlled rectifier into a conducting state, thereby causing the capacitor to discharge through the primary winding of the coil to induce an emf in the coil secondary winding for ignition purposes, the creation of the signal from the transformer secondary winding being delayed a sufficient time as a consequence of the time necessary for it to be induced to permit desired additional charging of the capacitor after actuation of said switch means.

3,842,818
IGNITION DEVICES

Timothy Anton Turton Cowell, and Dennis Cockburn Brown, both of Leamington Spa, England, assignors to Associated Engineering Limited, Warwickshire, England

Filed Nov. 16, 1972, Ser. No. 307,067
Int. Cl. F02p *1/00, 23/00;* **H01t** *13/28*
U.S. Cl. 123—169 MG **6 Claims**

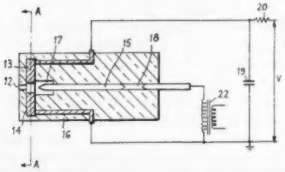


1. An ignition device for an internal combustion engine including a body of insulating material, a first electrode, a second electrode, said body together with said first and second electrodes defining a substantially closed chamber, said first electrode closing one end of said chamber and being formed with an orifice therethrough, said second electrode being rod-shaped and extending part-way towards said first electrode, whereby to define a first gap between said first and second electrodes, a first source of electrical potential connected across said first and second electrodes, said potential being insufficient to cause electrical breakdown of said first gap, and means, including a second source of electrical potential, at a substantially higher potential than said first source, to apply said substantially higher potential across at least part of said first gap, whereby to ionize said part of said first gap and thereby to cause the lower potential from the first source to be discharged across said first gap, the energy of the discharge being such as to cause a plasma arc to occur and rapidly heat up and expand the gas within said substantially closed chamber, thereby causing a plasma arc flame to project through said orifice.

3,842,819
IGNITION DEVICES

Francis J. Atkins, and Keith Waterson, both of Leamington Spa, England, assignors to Associated Engineering Limited, Warwickshire, England

Filed Nov. 16, 1972, Ser. No. 307,069
Claims priority, application Great Britain, Nov. 16, 1971, 53252/71
Int. Cl. F02f *1/00;* **F02p** *23/00;* **H01t** *13/28*
U.S. Cl. 123—169 MG **11 Claims**



1. An ignition device for an internal combustion engine having means for providing first and second potential differences, said ignition device comprising:

a chamber having a wall perforated by a hole through which said chamber is in communication with a medium to be ignited, and

means to produce a plasma flame which projects through said hole to ignite said medium, said means including

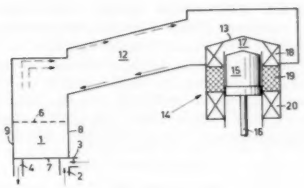
first and second electrodes defining therebetween a first gap transverse to said hole and having a breakdown potential too great to break down when only said first potential difference is applied across said electrodes, and

a third electrode defining between itself and one of said first and second electrodes a second gap having a breakdown potential such that it breaks down when said second potential difference is applied across it, thus causing ionization in said first gap when said first potential is simultaneously applied across said first gap, with a consequent electrical discharge across said first gap which causes said plasma flame to occur.

3,842,820
DEVICE FOR SUPPLYING THERMAL ENERGY TO ONE OR MORE PLACES TO BE HEATED

Albertus Peter Johannes Michels; Roelf Jan Meijer, and Henricus Cornelis Johannes Van Beukering, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,520
Claims priority, application Netherlands, Mar. 6, 1970, 7003199
Int. Cl. F28d *7/00*
U.S. Cl. 126—110 R **3 Claims**



1. Apparatus operable with a source of air and fuel to produce thermal energy to be transferred to a medium, comprising a combination combustion and heating chamber including an inlet for said air, and an inlet for said fuel, and an outlet, the chamber having walls which define a plurality of combustion ducts in which said air and fuel are mixed and in which combustion of said mixture and production of said thermal energy occurs, said combustion ducts having width substantially greater than height, with similar secondary ducts defined between each two combustion ducts and with said medium contained in said secondary ducts, and at least one wall of each of said combustion ducts being a boundary wall through which said thermal energy is transferred outward to said medium in the secondary ducts.

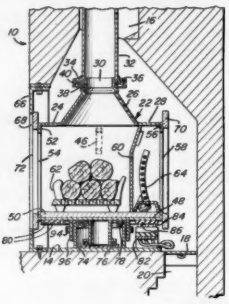
3,842,821
REVOLVABLE FIREPLACE

Andrew Juris, 408 E. 3rd St., Cle Elum, Wash. 98922

Filed Aug. 16, 1973, Ser. No. 388,922
Int. Cl. F24j *3/02*
U.S. Cl. 126—125 **4 Claims**

1. In combination, a fireplace defining a hollow housing including a bottom wall, upstanding peripheral side wall portions projecting upwardly from said bottom wall and an upper smoke outlet opening defining an upper closure portion interconnecting the upper portions of said peripheral side wall portions, an upstanding transverse partition in said housing dividing the interior of the latter into front and rear chambers, solid combustible fuel support means in said front chamber and supplemental heating means disposed in said rear chamber, said side wall portions including front and rear openings

opening into said front and rear chambers, a base, said housing being supported from said base for rotation relative thereto about an upstanding axis, an upper upstanding smoke pipe, and rotary coupling means rotatably connecting said smoke outlet opening to the lower end of said smoke pipe for rotation of the latter relative to the former about a second upstanding axis coinciding with the first mentioned axis, said partition isolating said rear chamber from said smoke outlet



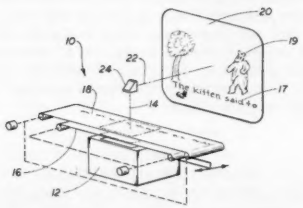
opening, said supplemental heating means comprising an electrical resistance heater, said base and housing including coacting brush and contact means operative to establish a rotatable electrical connection between said base and housing for said electrical resistance heater, said brush and contact means including means operating to automatically interrupt said electrical connection when said housing opening is rotated to a predetermined angular position relative to said base.

3,842,822

DYSMETRIC DYSLEXIA SCREENING PROCEDURE

Harold N. Levinson, 15 Lake Rd., Great Neck, N.Y. 11020, and Jan Frank, 45 E. 82nd St., New York, N.Y. 10028

Filed July 16, 1973, Ser. No. 379,771
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R **8 Claims**



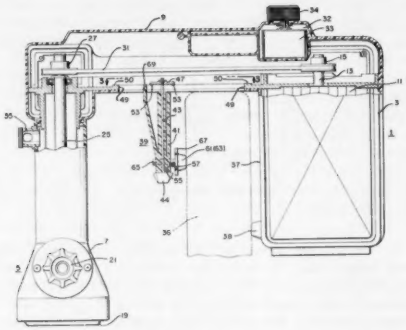
1. A group diagnostic screening procedure for identifying those in said group possibly having the condition of dysmetric dyslexia, which is based on the discoveries of a cerebellar-vestibular dysfunction and resulting sub-clinical eye oscillation indicative of said condition, said procedure comprising the steps of inducing an eye oscillation of a selected extent which is normally below the threshold level producing blurred vision, but which, when in additive relation to said sub-clinical eye oscillation, is above said threshold level, and automatically identifying those experiencing blurred vision as possibly being dysmetric dyslexic.

3,842,823

HYDROMASSAGE UNIT FOR TUB MOUNTING

Roy A. Jacuzzi, Moraga, and Peter L. Kosta, Lafayette, both of Calif., assignors to Jacuzzi Research Inc., Berkeley, Calif.

Filed Sept. 28, 1973, Ser. No. 401,861
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **6 Claims**



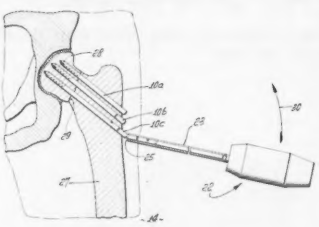
1. A hydromassage unit of the type adapted to straddle a wall of a tub for removable installation thereon comprising a power unit including a housing, a pump jet head assembly including a housing, a hollow bridge connecting said power unit housing and said pump and jet head assembly housing, drive means coupling said power unit to said pump through said bridge, bumper means on that wall of said power unit housing which faces the mounting wall of a tub when said hydromassage unit is installed, and adapted to contact such mounting wall, a clamping bracket assembly including means for supporting same from said bridge for movement longitudinally of said bridge, and means for locking said clamping bracket assembly at selected positions therealong.

3,842,824

NOTCHED SURGICAL PIN AND BREAKING TOOL THEREFOR

Alonzo J. Neufeld, 1650 Parkway Dr., Glendale, Calif. 91206

Filed Mar. 19, 1973, Ser. No. 342,442
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BA **9 Claims**



1. A surgical pin for use in joining bone section, said pin being formed of a rigid material capable of fracturing when exposed to localized bending forces of predetermined magnitude and being of circular cross section along substantially its entire length, said pin having a pointed forward end, and having first, second and third sections, said first section extending from said pointed end to said second section, said second section extending from said first section to said third section, said third section extending from said second section

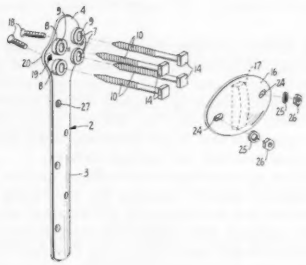
to the rearward end of said pin, said first section including a threaded portion adjacent said pointed end and otherwise being uninterrupted along its length, said third section also being uninterrupted along its length, said first and third sections being at least as long as said second section, said second section being interrupted by a series of longitudinally spaced transverse notches, the bottom of each notch defining a chord of the circular cross section and the notch reducing the mass of the pin opposite the notch forming a weakened section, each notch having a maximum depth to said chord less than the radius of said pin, whereby localized bending force at any selected notch of said series causes break off of said pin generally along the weakened section of said selected notch, said third section being of a length accessible outside the bone surface of a patient in the region where the pin is installed for manipulation and discarding after break off, said third section having a diameter throughout its length no greater than that of said second section whereby said second and third sections are adapted to receive a break off tool.

3,842,825

HIP FIXATION DEVICE

Richard F. Wagner, 62 San Jacinto Way, San Francisco, Calif. 94127

Filed Nov. 12, 1973, Ser. No. 414,711
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BB **9 Claims**



1. A hip fixation device comprising:

a. a spoon-shaped plate comprising an elongated handle portion adapted to extend laterally along and conform to the upper portion of the shaft of a femur and a bowl portion adapted to conform to the lower portion of the greater trochanter of said femur;

b. a plurality of spaced bores transversing the bowl portion said bores being adapted to receive hip screws therethrough in substantially parallel relationship to each other;

c. a flat plate surface surrounding the outer opening of each of the bores, against which the heads of the hip screws are adapted to seat;

d. a cover plate adapted to be attached over the outer side of the bowl portion and against the heads of said hip screws;

e. a raised portion on the inner side of the cover plate adapted to fit between the heads of said hip screws and prevent rotation thereof; and

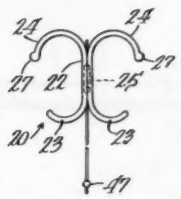
f. means for attaching the cover plate over the outer side of the bowl portion whereby pressure is exerted against the heads of the screws to keep them from loosening from the femur.

3,842,826

INTRAUTERINE CONTRACEPTIVE DEVICE AND INSERTER THEREFOR

John L. Nolan, c/o Hollister Incorporated, 211 E. Chicago Ave., Chicago, Ill. 60611

Filed Oct. 25, 1972, Ser. No. 300,748
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **7 Claims**



1. A combined assembly including an intrauterine contraceptive device and inserter therefor comprising,

a. an intrauterine contraceptive device including a central elongated stem and a pair of outwardly extending resilient wings at each end thereof collapsible into linear alignment with the stem,

b. an elongate tube positionable in a uterine cervix and having an interior passage at one end thereof to receive the collapsed contraceptive device,

c. an elongate rod reciprocable in the tube having one end adapted to engage the contraceptive device in collapsed linear form for ejecting the device and an opposite end projecting from the tube for manual access,

d. a pair of opposed apertures in opposite sides of said tube adjacent said one end thereof for receiving a pair of resilient wings at one end of said stem extending outwardly in relaxed condition while the resilient wings at the opposite end of the stem extend outwardly from said one end of the tube, so that the contraceptive device may be stored in relaxed condition,

e. a string connecting the contraceptive device and said one end of the rod said tube being of resilient material and having an opening therein spaced from said opposed apertures, and

f. a lateral protrusion on said rod positionable in said opening for maintaining the rod in a position in which the string prevents complete removal of the contraceptive device from the tube, whereby said device may be pulled outwardly toward said one end of the tube to linearly align the first-mentioned pair of resilient wings, the device rotated 90° to misalign the said pair of wings with the apertures whereupon said rod may be moved outwardly of the tube to draw said device into said tube to align all of the wings linearly and position the device for insertion in the uterus.

3,842,827

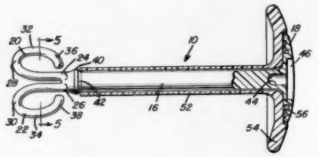
ENDOCERVICAL CONTRACEPTIVE DEVICE

Edith Hope Jacobs, 402 Mohawk Dr., Jeffersonville, Ind. 47130

Continuation-in-part of Ser. No. 240,367, April 4, 1972, abandoned. This application June 26, 1973, Ser. No. 373,621
Int. Cl. A61f *5/46*
U.S. Cl. 128—131 **11 Claims**

1. A contraceptive device comprising an elongated stem including an enlarged head at a first end thereof and at least one pair of endwise outwardly divergent and back-turned resilient legs at the other end, a sleeve constructed of shape retentive but at least somewhat flexible and resilient material slidably disposed on said stem intermediate said head and the base end of said legs for extension over said legs from the base ends thereof for retraction of the legs into the adjacent end

portion of said sleeve with said legs bent toward each other at their free ends and disposed generally parallel and within said sleeve, said sleeve being of a length adapted to correspond with the length of the cervical canal of the user, said stem including a diametrically enlarged portion thereof adjacent the base ends of said legs wedgingly telescoped into the adjacent end of said sleeve, said sleeve being shiftable toward and into abutted engagement with said head, said enlarged portion



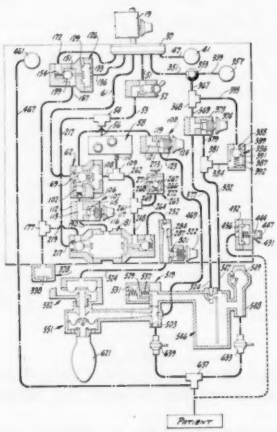
including a generally conical seating surface tapering toward said head and at least partially wedgingly seated in the end of said sleeve when said sleeve is abutted against said head, whereby the resiliency of said material, in conjunction with the taper of said seating surface, tends to cam said sleeve toward said head into tight abutted engagement therewith, the seated engagement of said seating surface in the end of said sleeve remote from said head sealingly closing that end of the sleeve.

3,842,828

PEDIATRIC VENTILATOR

Forrest M. Bird, 212 N.W. Cerritos, Palm Springs, Calif. 92262

Filed Sept. 8, 1972, Ser. No. 287,416
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **30 Claims**



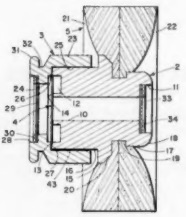
1. In a ventilator for use with a source of gas under pressure generally in the range of 50–75 p.s.i. and having an inhalation phase and an exhalation phase in its operative cycle, an inlet adapted to be connected to said source of gas, a breathing circuit adapted to be connected to the patient, flow regulating means for adjusting the rate of flow of gas from the inlet, nebulizing means coupled to the breathing circuit and having main jet flow means and auxiliary flow means and flow divider means connected to the flow regulator means and using said gas having a pressure ranging from 50–75 p.s.i., said flow divider means having one outlet coupled to the main jet flow means of the nebulizing means so that at least a portion of the inlet gas is supplied to the nebulizing means and an additional outlet coupled to the auxiliary flow means of the nebulizing means, said flow divider means including adjustable flow splitting means in the auxiliary flow path for controlling the flow of gas through the additional outlet whereby precise control over the operation of the nebulization means can be obtained by directing a precise portion of the inlet gas to the main jet flow means of the nebulizing means without substantial change to the pressure and rate of flow of the gas being supplied to the patient.

3,842,829

EAR PROTECTIVE DEVICE

Charles A. Ellis, 501 Point Rd., Marion, Mass. 02738

Filed Nov. 18, 1971, Ser. No. 199,908
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 **2 Claims**



1. A device for protecting the ear comprising:

first and second cylindrical elements, each of said elements including an axial sound passageway therethrough and a concentric diaphragm support surface at one end thereof formed substantially flat within a plane normal to the longitudinal axis of said elements; and a diaphragm supported between said support surfaces;

said first element further including a portion of the outer diameter reduced adjacent the end having the support surface and an elastomeric disc mounted annularly about the opposite end thereof; an inner cylindrical member telescopically adjustable to said first cylindrical element as by interfitting threads, together with frictional holding means in the form of a wave washer for maintaining selected positions of said inner member relative to said first element; said inner member constuting a concentric diaphragm stop surface formed substantially flat and within a plane normal to the longitudinal axis of said member; whereby when the inner member is adjusted to its innermost position relative to the first cylindrical element, the stop and support surfaces will lie in the same plane, and when adjusted away from this limit position the stop and support surfaces will lie in separated and parallel planes;

said second element further comprised of a unitary cylindrical member including a concentric recess at the end adjacent the said support surface adapted to receive in fitting relation the reduced diameter portion of said first cylindrical element, and a concentric diaphragm stop surface at the same end thereof formed substantially flat in a plane normal to the longitudinal axis of said element; said stop surfacellying inward, radially and longitudinally of said second element with respect to the said support surface; a circumferential groove adjacent the end opposite that containing said recess and adapted for engagement as by finger-nails; whereby in assembled position, the stop surfaces are adapted to contact a portion of the central half of the area of the diaphragm that vibrates in response to sound of a predetermined limiting intensity

and the viscous drag of air between the stop surfaces and diaphragm may be used to control the damping characteristics of the diaphragm for sound levels below the limit intensity established.

3,842,830

SURGICAL DRESSING AND METHOD OF FORMING THE SAME

Thomas S. Hargest, 1078 Winslow Dr., Charleston, S.C. 29412

Filed Mar. 26, 1973, Ser. No. 344,856
Int. Cl. A61l *15/03*
U.S. Cl. 128—155 **4 Claims**

1. A method of arresting bleeding and forming a thermally insulating dressing in situ, comprising the steps of applying a quantity of ceramic microparticles directly to the site of injury, such microparticles having a specific gravity greater than 1.0 and a size within the range of 30 to 150 mesh, and continuing such application until the quantity of microparticles exceeds the volume of blood and other fluid at said site.

3,842,831

CELLULAR SKIN PATCH

Arthur A. Beisang, St. Paul, and Robert A. Ersek, Minneapolis, both of Minn., assignors to Genetic Laboratories, Inc., Roseville, Minn.

Division of Ser. No. 301,426, Oct. 27, 1972, Pat. No. 3,793,103. This application Aug. 6, 1973, Ser. No. 385,910
Int. Cl. A61l *15/04*
U.S. Cl. 128—155 **2 Claims**

1. Cellular skin patches arranged for cryogenic storage and comprising:

a. a skin patch consisting of an integral cohesive natural cellular skin layer having substantial length and width dimensions; and

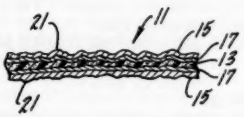
b. scrim means secured to one surface thereof and comprising a generally loose woven thread scrim having less than about 64 openings per square inch.

3,842,832

DISPOSABLE LAMINATE PRODUCT AND METHOD OF MAKING IT

Harold A. Wideman, and Ronald H. Wideman, both of Menasha, Wis., assignors to Poly Wide, Inc., Menasha, Wis.

Filed Oct. 6, 1972, Ser. No. 295,471
Int. Cl. A61f *13/00*
U.S. Cl. 128—169 **8 Claims**



1. A disposable elongated laminated stretch bandage including:

an outer layer of nonwoven material on opposite sides of said bandage, and

a layer of longitudinally stretchable foam material located between said outer layers of nonwoven material,

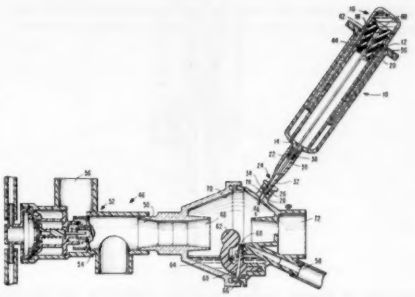
said layers being adhered together over the entire extent in laterally extending undulations.

3,842,833

NEB-U-PACK

Robert Walter Ogle, Newport Beach, Calif., assignor to IMS Limited, El Monte, Calif.

Filed Dec. 11, 1972, Ser. No. 314,030
Int. Cl. A61m *15/00*
U.S. Cl. 128—194 **3 Claims**



1. A novel combination comprising a medicament injector comprising: a cylindrical vial having an open end and a closed end, a resilient plug adapted to be inserted at least partially through said open end of said vial; a plurality of outwardly extending rings upon said plug engaging the walls of said vial with a press fit; a cylindrical member having one closed end, said cylindrical member holding a needle extending inwardly into said cylindrical member and having a sharpened inner end; and said cylindrical member having a tip extending outwardly therefrom, said tip being an elongated member of generally circular cross-section and having a central fluid passage extending substantially the length of the tip, said central fluid passage being in fluid communication with said needle, said tip having three zones, the first of which is cylindrical, the second or intermediate which is tapered, and the third or outlet zone which is cylindrical but of smaller external diameter than said first zone, interlocking means on said cylindrical member and cooperating interlocking means on said plug, whereby upon interlocking of said plug with said cylindrical member said vial is first held in an assembled but non-operating position and upon further interlocking of said plug with said cylindrical member, said plug is adapted to be pierced by said sharpened inner end of said needle and said needle communicated with said vial without the application of substantial axial pressure on said plug and said plug is locked securely to said cylindrical member to permit aspiration upon withdrawal of said vial or to permit expulsion of the contents of said vial upon exertion of pressure on said vial through said tip; and a nebulizer comprising an air inlet, an air outlet adapted to lead to the patient, means for forcing air through said nebulizer, means within nebulizer for evaporating and forming particles of liquid medicament for inhalation therapy in the air stream passing through said nebulizer and a medication introduction port opening into the interior of said nebulizer above the liquid medication level within said nebulizer, said tip being at least partially received in said port and contacting said port to form a seal therewith whereby liquid medication can be introduced into said nebulizer by the exertion of pressure on said vial.

3,842,834

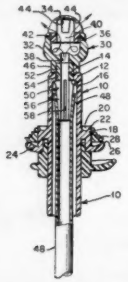
ADJUSTABLE RECTAL APPLICATOR WITH FLUID DISTRIBUTING AND DRAINING NOZZLE

Alexander A. Vass, 309 E. 87th St., New York, N.Y. 10028

Filed Jan. 18, 1973, Ser. No. 324,797
Int. Cl. A61m *3/00*
U.S. Cl. 128—245 **15 Claims**

1. A nozzle head for an applicator, of the character described, comprising a hollow body having a substantially

dome-shaped proximal portion and a substantially spheroidal distal portion, wherein the proximal portion defines a cavity of lesser diameter than that of said distal portion, said body having an inlet opening formed in said distal portion and a



plurality of spaced outlet openings formed in said proximal portion, and a tubular stem portion connected to said distal portion, surrounding said inlet opening and adapted to be separably connected to a fluid conduit.

3,842,835

Patent Not Issued For This Number

3,842,836

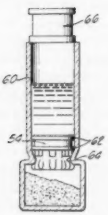
MULTI-MIX

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, El Monte, Calif.

Division of Ser. No. 195,886, Nov. 4, 1971, which is a division of Ser. No. 830,311, June 4, 1969, Pat. No. 3,674,028. This application Feb. 9, 1973, Ser. No. 331,187

Int. Cl. A61j *1/00*

U.S. Cl. 128—272 **6 Claims**



1. A two compartment rigid mixing vial comprising a first compartment having a closed end, generally cylindrical walls, a second compartment having generally cylindrical walls, said first and second compartments having a common center line and being separated by an inwardly extending annular ring in the vial wall, a resilient imperforate first stopper in said second compartment, said first compartment being larger in diameter than said second compartment and said first stopper being receivable in said first compartment, a second resilient stopper sealing the end of said second compartment opposite said first stopper, said first stopper comprises an upper portion having one or more sealing rings forming a seal on the inside walls of said second compartment, and a lower portion comprising a series of generally vertical interruptions around the periphery of the lower portion, and an annular indentation immediately above said interruptions, said indentation being complementary in shape to said annular ring and receiving said ring to form a seal, said interruptions, when said sealing rings are held beyond the end of said second compartment by said interruptions, forming a force compression fit with the walls of said second compartment and the spaces between the interruptions being adapted to provide a gas passage from the interior of said first compartment to the exterior.

3,842,837

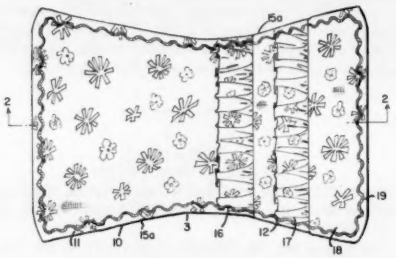
BABY DIAPERS

Ruba J. Sward, 828 K, Galveston, Tex. 79720

Continuation-in-part of Ser. No. 650,569, June 28, 1967, abandoned. This application Apr. 19, 1972, Ser. No. 245,322

Int. Cl. A61f *13/16*

U.S. Cl. 128—284 **5 Claims**



1. An article of manufacture comprising a diaper consisting of two united wings, each comprised of at least two overlaying sheets of a soft resilient material having a soft padding therebetween, said two united wings being disposed in end to end assembly to provide inwardly converging side edges for each wing and a narrow area adjacent the joinder area of said wings adapted to fit under the crotch of an infant, means for grasping and holding the diaper comprising at least one of said wings having at least one additional sheet partially overlaying a sheet portion of one of said wings transversely thereof from edge to edge of the wing and attached thereto by stitching along at least one edge of said additional sheet, said additional overlaying sheet being comprised of a material having a planar width across the width of said wing of at least approximately one and one-half times said width of said wing to which said overlaying sheet is attached said additional overlaying sheet having a portion spaced from and unattached to said at least one wing by being gathered along the stitched edge so as to approximately conform to the said width of said wing and define a grasping portion.

3,842,838

REMOVABLE DIAPER TOPSHEET PORTION FOR DISPOSAL OF SOLID WASTES

Dale A. Gellert, Aurora, Ind., assignor to The Proctor & Gamble Company, Cincinnati, Ohio

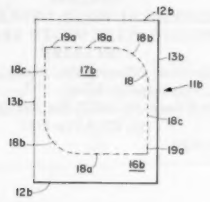
Continuation-in-part of Ser. No. 222,065, Jan. 31, 1972, abandoned. This application Dec. 7, 1972, Ser. No. 313,079

Int. Cl. A61f *13/16*

U.S. Cl. 128—284 **11 Claims**

1. A disposable diaper having sides aligned substantially parallel to its longest dimension and ends aligned substantially parallel to its shortest dimension, said diaper being suitable for securement about the wearer's waist by the application of tension in a direction substantially parallel to said shortest dimension at the ends of said diaper, said diaper comprising a liquid-absorbent pad and a liquid-pervious topsheet secured along its entire periphery in superposed relation to said liquid-absorbent pad, a centrally-located portion of said topsheet defining a liquid pervious feces-receiving sheet portion separable from said topsheet, said feces-receiving sheet portion being defined by means of a continuous line of weakness in

said topsheet, the periphery of said feces-receiving sheet portion being completely located within the perphery of said topsheet so as to provide an imperforate border, whereby the portions of said topsheet located at the ends of said diaper

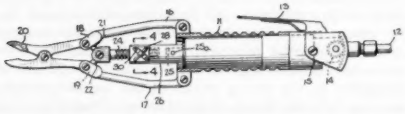


which are subjected to in use tension in a direction substantially parallel to said shorter dimension are not weakened by said continuous line of weakness, said feces-receiving sheet portion being adapted for separation and removal from the remainder of said diaper to permit separate disposal thereof.

3,842,839
RONGEUR

Leonard Irving Malis, 219-44 Peck Ave., Hollis Hills, N.Y. 11423, and Frank Macalus, 60 S. Hillcrest Ave., Ardsley, N.Y. 10502

Filed Apr. 5, 1973, Ser. No. 348,287
Int. Cl. A61b *17/16, 17/32;* **F16h** *29/02*
U.S. Cl. 128—312 **3 Claims**



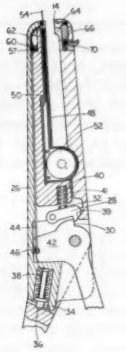
1. A power driven rongeur which comprises:
a. a rotary drive motor having an output shaft at one end thereof;
b. means for actuating said rotary drive motor;
c. a pair of cooperative blades comprising:
1. elongated members pivoted together intermediate their ends and
2. a pair of cutting blades at one end of the members;
d. linkage means having one end thereof connected to the other ends of the elongated members opposite said pair of cutting blades;
e. an externally threaded member having one end thereof connected to the other end of said linkage means;
f. an internally threaded member coupling the output shaft of said drive motor to said threaded member and having at least one thread thereof oppositely disposed to said threaded member to form a helical groove; and
g. a train of balls disposed in the helical groove provided by said externally and internally threaded members so as to provide linear movement of said threaded member upon rotation of said drive motor whereby said cutting blades are caused to move with respect to one another.

3,842,840
SUTURE APPLICATOR

Edward E. Schweizer, P.O. Box 314, Katonah, N.Y. 10536

Filed May 7, 1973, Ser. No. 358,082
Int. Cl. A61b *17/04*
U.S. Cl. 128—334 R **10 Claims**

1. A surgical suture applicator comprising:
a first lever including a first jaw arm thereon;
a second jaw arm;
a pivotal connection between said first lever and said second jaw arm;
an actuator lever;
means releasably connecting said actuator lever to said second jaw arm to transmit pivotal movement thereto;
a needle slidably carried in said second jaw arm from a retracted position within said second jaw arm to a suturing position extended therefrom toward said first jaw arm;
a needle-receiving passageway in the end of said first jaw arm;

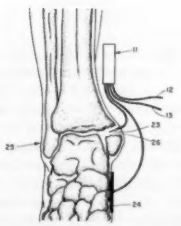


a supply of suture on said second jaw arm;
means on the end of said second jaw arm outward of said needle for gripping a length of suture from said supply across the path of said needle;
means operable to disengage said releasable connecting means when said jaw arms have pivoted to a relatively closed position; and means then operable to restrain further relative movement between said jaw arms;
means responsive to further pivotal movement of said actuator lever toward said first lever for moving said needle into said suturing position; and
means on the end of said needle for grasping said length of suture during said movement.

3,842,841
CONSTANT CURRENT POWER PACK FOR BONE HEALING AND METHOD OF USE

Carl T. Brighton; Zachary B. Friedenberg, and William Redka, all of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 29, 1971, Ser. No. 193,728
Int. Cl. A61n *1/20*
U.S. Cl. 128—419 R **13 Claims**



1. A system for expediting the healing of bone fractures and bone defects in a living being comprising:

constant current source means for providing a constant value of current despite changes in load;

means for connecting said constant current means to the living being, such connection acting to produce current flow into said fracture or defect,

said connecting means including further means for application internally of said living being at the fracture or defect site,

said constant current being a selected value within a predetermined microampere range so as to promote bone formation at the fracture or bone defect site and avoid fibrous tissue formation in other areas of the living being.

3,842,842

LONG LIFE IMPLANTABLE CARDIAC PACER GENERATOR AND METHOD OF CONSTRUCTION

John Kenny, 4 Hobb's Way, and Alan Wilds, 36 Newfields, both of Welwyn Garden City, Hertfordshire, England

Filed Sept. 22, 1972, Ser. No. 291,358

Claims priority, application Great Britain, Sept. 24, 1971, 44741/71

Int. Cl. A61n 1/36

U.S. Cl. 128—419 P **10 Claims**

1. An implantable cardiac pacer generator comprising a housing formed of two pre-moulded sections of plastic material, sealing means sealing the two sections by a surface seal at the interface, the sealed housing defining at least one cavity, a pulse generating means housed within the at least one cavity, an electrode and an electrode connecting block positioned so that exterior electrical connections may be established thereby, connectors sealed in the sections and making electrical connections between the electrode and the electrode connecting block and the pulse generating means, and a source of electric current housed within the at least one cavity and connected to power the pulse generating means.

3,842,843

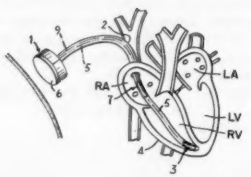
BIOGALVANIC POWER SUPPLY DEVICE AND METHOD

Michel Mourot, 11, rue de L'Abbe Gridel; Bernard Dodinot, 15, rue Bois-le-Pretre; Daniel Burnel, 9, rue Saint Fiacre; Regis Freschard, 3, rue du General Duroc, and Guy Fontenier, 23, rue du Sergent Bobillot, all of Nancy, France

Filed Dec. 26, 1972, Ser. No. 318,583

Int. Cl. A61n 1/36

U.S. Cl. 128—419 P **22 Claims**



1. A power supply for use implanted in use in a body for providing power to an apparatus comprising, a biogalvanic cell implantable in a body and comprising a cathode means implantable endocardially in said body and an anode means implantable in subcutaneous tissue of said body at a distance from said cathode means, said cathode means comprising platinum and having a smooth surface coacting electrochemically in use with biological substances in the body and said anode means comprising a material consumed by galvanic action when implanted in said subcutaneous tissue of said body and means electrically connecting said anode means and said cathode means for flowing a current flow therethrough in dependence upon an electric potential between said anode means and said cathode means, said distance between said anode means and said cathode means being a distance effective to preclude inhibiting the action of said cathode means as said anode means is progressively consumed.

3,842,844

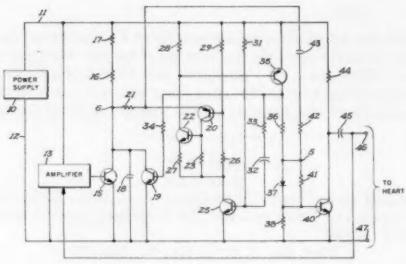
ELECTROMEDICAL PULSE GENERATOR WITH CONTINUOUS PULSE WIDTH ADJUSTMENT CIRCUITRY

Clifton A. Alferness, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed June 30, 1972, Ser. No. 267,935

Int. Cl. A61n 1/36

U.S. Cl. 128—422 **4 Claims**



1. In electrical medical apparatus including pulse generator means adapted to provide stimulation pulses to means adapted to be connected to a body, and including power supply means for providing voltage to the pulse generator means, the improvement comprising: pulse width timing circuit means connected to the pulse generator means; the pulse width timing circuit means including fixed time constant means; and means connected to the timing circuit means for substantially increasing the pulse width of the stimulation pulses in response to decreases in voltage from the power supply means, to maintain the total energy of the stimulation pulses above a predetermined level over a range of decreasing voltage levels.

3,842,845

TOBACCO REPLACEMENT MATERIAL

William Francis Cartwright, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 224,997, Feb. 9, 1972, Pat. No. 3,812,864. This application Oct. 25, 1973, Ser. No. 409,568

Int. Cl. A24b 15/00

U.S. Cl. 131—2 **3 Claims**

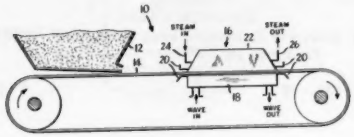
1. A process for preparing an improved tobacco substitute comprising mixing

1. 15–85 percent by weight of a combustible material selected from the group consisting of vinyl methyl ether: maleic anhydride copolymer and the hydrolyzed or salt forms thereof;
2. 15–85 percent by weight of a particulate inorganic material selected from the group consisting of limestone; dolomite diatomaceous earth; perlite; magnesite; vermiculite; and salts having a cation selected from the group consisting of zinc, titanium, magnesium, calcium, aluminum and iron and an anion selected from the group consisting of the carbonate, oxides, hydroxides, sulphates, phosphates, aluminates, silicates and alumino-silicates; and
3. 0–40 percent by weight of a secondary combustible material selected from the group consisting of tobacco dust, sodium gluconates, pectin, natural gums, cellulose, cellulose ethers and esters, and oxidized cellulose; casting a film of the mixture in aqueous state, and drying said film.

3,842,846
MICROWAVE EXPANSION OF TOBACCO

Tibor S. Laszlo, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,594
Int. Cl. A24b 3/18
U.S. Cl. 131—140 P 12 Claims



1. A process for puffing tobacco which comprises treating tobacco leaf with a water impregnant to provide said tobacco leaf with a moisture content in the range of about 20 percent to about 60 percent by weight of the total weight of the impregnated tobacco leaf, introducing said impregnated tobacco leaf into a treating zone, flowing steam through said treating zone to saturate said zone with water vapor to give a partial pressure of at least 40 percent and subjecting said tobacco while in said zone to a microwave field to vaporize the water in said tobacco leaf at a rate and pressure which expands the cell walls of said tobacco causing puffing of the same.

3,842,847
SHAMPOO COMPOSITIONS AND METHOD FOR TREATING THE HUMAN HAIR AND SCALP EMPLOYING CERTAIN ASTRINGENT SALTS

Gordon Trent Hewitt, Upper Montclair, and Henry Paul Furgal, Bernardsville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,274
Int. Cl. A61k 7/06
U.S. Cl. 132—7 9 Claims

1. An aqueous shampoo composition useful for treating hair on the scalp to cleanse and decrease static charges and soiling characteristics consisting essentially of about 0.5 percent to 8 percent by weight of a water-soluble astringent salt of aluminum, hafnium, zinc, or zirconium wherein the salt-forming anion is selected from the group consisting of halides, sulfates, sulfamates, halohydrates, and oxyhalides; about 1 percent to 20 percent by weight of a higher alkyl di-lower alkyl amine oxide or mixture thereof; and about 1 percent to 20 percent by weight of an N-higher alkyl, N,N-di-lower alkyl aminopropane sulfonate or N-higher acylamido-lower alkyl, N,N-di-lower alkyl aminopropane sulfonate or mixture thereof in an aqueous medium; said higher alkyl and higher acyl groups containing from 10 to 18 carbon atoms and said lower alkyl groups containing from 1 to 4 carbon atoms; said shampoo having a pH of 3 to 6.5, being free of anionic detergent, and being effective to reduce static charges on the hair and to decrease the rate of re-soiling of the hair.

3,842,848
KERATIN POLYPEPTIDE HYDROLYZATES AS HAIR TREATING AGENTS

Sulo A. Karjala, Chicago, Ill., assignor to Wilson-Sinclair Co., Oklahoma City, Okla.

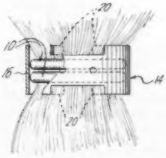
Filed May 27, 1971, Ser. No. 147,622
Int. Cl. A61k 7/10
U.S. Cl. 132—7 2 Claims

1. A method of treating hair fibers to provide a permanently bonded protective and conditioning content of disulfide-containing proteinaceous agent comprising contacting the hair with an effective amount of an aqueous composition containing water having dissolved therein from 4 percent to 8 percent by weight of ammonium thioglycolate reducing agent and from 5 percent to 25 percent by weight of a water soluble keratin polypeptide hydrolyzate having an intact disulfide unit content in the range between 15 and 49 moles of disulfide linkages per 100,000 grams of hair, said hydrolyzate being produced by hydrolyzing keratin-containing hair at 100°–160°C. in the presence of phosphoric acid having a concentration of 4 percent to 85 percent until the disulfide content is in the range specified while maintaining a pH less than 4 throughout the hydrolysis reaction, draining off said aqueous composition, and then contacting said hair with an effective amount of an aqueous solution of an oxidizing agent.

3,842,849
PONY-TAIL HOLDER

Jacob Goodman, New York, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.

Continuation of Ser. No. 212,595, Dec. 27, 1971, abandoned.
This application Apr. 25, 1973, Ser. No. 354,176
Int. Cl. A45d 8/00
U.S. Cl. 132—46 R 18 Claims



1. An ornamental pony-tail holder, including a pont-tail ring and a decorative clamp for cooperative assembly to a wearer's pony-tail, said pony-tail ring having at least one turn encircling the pony-tail when applied thereto, said decorative clamp embracing the pony-tail ring when assembled thereto on a pony-tail, said decorative clamp including a resilient member adapted to extend incompletely around a pony-tail and having end portions spaced apart so as to leave a gap for admitting a pony-tail laterally, the extent of said member being sufficiently more than half-way around a pony-tail for retention thereof on the pony-tail, and said member including portions converging toward said gap, said end portions extending from said converging portions and having diverging surfaces for promoting entry of a pony-tail into the clamp when the clamp is being pressed, gap foremost, against a pony-tail, and said clamp having means adapted to cooperate with the pony-tail and the pony-tail ring thereon for restraining the decorative clamp against shifting around the pony-tail and against shifting along the pony-tail out of position embracing the pony-tail ring, said restraining means including at least one tooth projecting from said member toward said gap for penetrating into a pony-tail close to a pony-tail ring thereon.

3,842,850
BRUSH ASSEMBLY

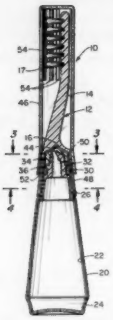
Willis W. Sanders, 524 15th St., Santa Monica, Calif. 90402

Filed Oct. 12, 1972, Ser. No. 296,988
Int. Cl. A45d 44/18
U.S. Cl. 132—84 B 5 Claims

1. A brush assembly comprising:
an elongated shank;
a brush having a plurality of bristles connected at one end of said shank, connecting means attached to the other end of said shank, said connecting means includes a recess located within said shank, at least one longitudinal ridge is formed upon said shank and extends within said recess, said recess being inwardly tapered;
a container having an interior chamber to hold a supply of a dentifrice, said container having an aperture therein to

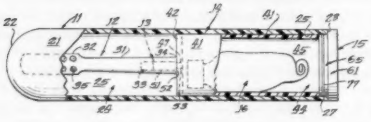
permit discharge of said dentifrice from said container, said container being formed of a flexible material to permit squeezing of said container and discharge of said dentifrice; and

first means formed upon said container and located about said aperture, said first means comprising a plurality of longitudinal grooves formed on a tapered member, said



longitudinal ridge of said connecting means to be positioned between an adjacent pair of said longitudinal grooves of said first means to lock together said shank and said container and prevent relative rotational movement therebetween, with said connecting means engaging said first means said shank closing said aperture to the ambient.

3,842,851
COMPACT PORTABLE TOOTHBRUSH
Joseph Pipitone, 3314 Garnet Rd., Baltimore, Md. 21234
Filed Aug. 23, 1973, Ser. No. 390,952
Int. Cl. A45d *44/18*
U.S. Cl. 132—84 A **7 Claims**



1. A compact portable toothbrush comprising:

an elongated hollow tubular handle member closed at one end and open at the opposite end;

a compartment defined in said handle member accessible through said open end thereof and adapted to carry a tube of toothpaste and the like therein;

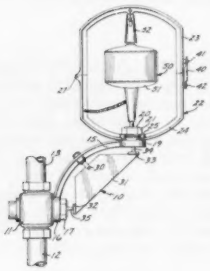
a toothbrush member having a short shank portion, a brush head mounted on one end of said shank, the opposite end of said shank adapted to be detachably mounted on the closed end of the handle member and extend outwardly therefrom;

an elongated hollow tubular cover member closed at one end and open at the opposite end;

a compartment defined in said cover member extending the complete length thereof and accessible through said open end thereof, the compartment being of a size and configuration adapted to hold completely therein the interconnected toothbrush member and handle member; and

a cap member detachably attached to the open end of the cover member simultaneously closing both the cover compartment and the handle compartment and permitting selective simultaneous access thereinto for removal and replacement of the various members within the cover member, with the cap in the closed position sealing the cover member compartment to prevent contaminants, dirt and the like from entering into the cover member compartment.

3,842,852
DISASTER VALVE
Clyde F. Bair, 408 E. 46th St., Long Beach, Calif. 90807
Filed Feb. 28, 1973, Ser. No. 336,626
Int. Cl. F16k *17/36*
U.S. Cl. 137—39 **4 Claims**



1. In a disaster valve assembly including a spring loaded shut-off valve having an axially movable valve stem maintained in the open position by a yoke assembly comprising a yoke operatively connected to the valve housing, a weighted collapsible column operatively disposed between an extreme member of said yoke at one end thereof and adapted to compress at the other end thereof the valve stem, and fusible structural connections included in said yoke, the improvement comprising:

an arcuate intermediate member adapted to extend from said valve along any one selected azimuth relative the central axis of said valve stem and adapted to connect to said yoke at the other end thereof;

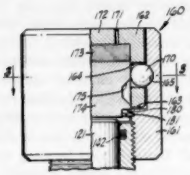
a rocker plate centrally disposed to pivot from the interior of the arc of said arcuate member abutting at one end thereof said valve stem; and

a follower slidably disposed in the other end of said member abutting the other end of said rocker at one end thereof and extending to the interior of said yoke to be compressed against said column at the other end thereof.

3,842,853
FIRE SAFETY VALVE
Warner M. Kelly, Houston, and John V. Fredd, Dallas, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Continuation-in-part of Ser. No. 25,976, April 6, 1970, Pat. No. 3,659,624. This application Apr. 28, 1972, Ser. No. 248,499
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **9 Claims**

1. A heat-responsive cap assembly for use with a valve having a valve housing and a longitudinally movable stem to lock the stem at a first position and release the stem for movement to a second position responsive to a temperature in excess of a predetermined value, said assembly comprising: cap means engageable with said valve housing at the free end of said stem of said valve; and fusible means in said cap means between said stem and said cap means retaining said cap means in engagement with said housing whereby said cap means holds said valve stem at said first position, said fusible means being adapted to release said cap means from engagement with said valve housing responsive to a force applied by

said valve stem when the temperature of said fusible means exceeds a predetermined value, said fusible means comprising a body of fusible material within said cap assembly and having



a surface engageable with an end face of said valve stem and said fusible material being extrudable from said cap assembly above said predetermined temperature to release said stem for movement to said second position.

3,842,854

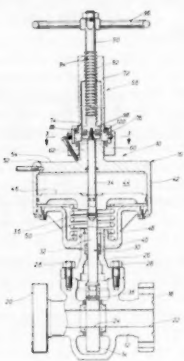
HEAT RESPONSIVE SAFETY DEVICE FOR MANUAL GATE VALVE OPERATORS

Charles H. Wicke, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,736

Int. Cl. F16k *17/38*

U.S. Cl. 237—77 **3 Claims**



1. A gate valve structure comprising, a valve body, a gate valve movable between open and closed positions in said body, a cylindrical housing on the valve body having a piston mounted therein to provide a fluid actuator, a stem connected to said piston and said gate valve and movable therewith, a threaded extension on said cylindrical housing having a center opening therein receiving the valve stem, an outer sleeve threaded on said extension, means continuously biasing the piston and stem toward a closed position of the valve, a manual override structure connected to said outer sleeve for manual operation of the gate valve to open position independently of the fluid actuator, said manual override structure including a movable operator shaft operatively connected to the stem, a handwheel operatively connected to the operator shaft and effective upon rotation thereof to actuate the operator shaft and move the gate valve to open position, releasable locking means between the override structure and the outer sleeve releasable upon an outward movement of the override structure as a unit relative to the sleeve to permit detachment of the override structure from the outer sleeve, a fusible material destructible at a predetermined high temperature between the override structure and outer sleeve, at least one metering opening for the fusible material provided adjacent the fusible material, said fusible material being under compression from the outward thrust of said stem when the override structure is actuated and is maintaining the gate valve in an open position and upon reaching a predetermined high temperature fusing and flowing through said metering opening to permit said outward movement of the override structure relative to the sleeve, said releasable locking means being released upon said outward movement of the override structure to provide detachment of the override structure from said sleeve under the thrust of the valve stem and movement of the gate valve to a closed position.

3,842,855

HYDROSTATIC FLOW-AMPLIFIER

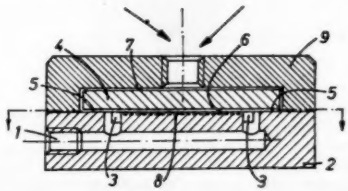
Ivan Jaroslav Cyphelly, 8128 Hinteregg, Switzerland

Filed May 28, 1969, Ser. No. 828,476

Claims priority, application Switzerland, Oct. 30, 1968, 16194/68; June 27, 1968, 9616/68

Int. Cl. G05d *16/00*

U.S. Cl. 137—85 **13 Claims**



1. A hydrostatic flow-amplifier with a poppet valve as the throttling means comprising housing means defining a space; a throttling disc forming the poppet of said valve; said disc being received in said space and being reciprocal therein, said disc defining with said housing a first pressure area, a second pressure area, and a third pressure area, first intake means communicating with said first pressure area; outlet means communicating with said second pressure area, second intake means communicating with said third pressure area; a first seat for said disc formed in said housing, said seat separating said first and third pressure areas; a second seat for said disc formed in said housing, said second seat including an annular surface concentric with said first seat and separating said first and second pressure areas, said first and second seats confronting the same side of said disc, control means for establishing effective positions of displacement of said disc simultaneously with respect to said first and second seats, said control means including a source of fluid at adjustable reference pressure, passage means connecting said source and said second intake means of said third pressure area, adjustable valve means disposed intermediate said source and said third pressure area, said first pressure area is a high pressure area, said second pressure area is a load pressure area, said third pressure area is an intermediate pressure area, and wherein said first seat is a control seat, said second seat is a load seat, said control seat defining with said disc a control throttling gap and said load seat defining with said disc a load throttling gap.

3,842,856

COMBINED GAS TRAP AND LIQUID SEPARATOR

Abraham C. Miselem Asfura, Tecualiapan No. 60-22, Mexico 21, D.F., Mexico

Filed Jan. 10, 1973, Ser. No. 322,491

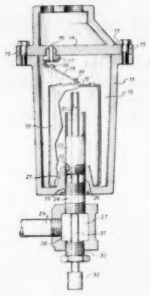
Claims priority, application Mexico, Aug. 14, 1972, 137745

Int. Cl. F16t *1/30*

U.S. Cl. 137—179 **9 Claims**

1. A combined gas trap and liquid separator, comprising a hollow body including a cover and defining an internal cham-

ber, an inverted bucket vertically movable inside said chamber, said cover having an outlet opening for liquid discharge from said chamber, means including a lever movably connecting said bucket to a part of said body, a valve operated by said lever and determining the closed condition of the outlet opening for a predetermined elevated position of said bucket, and determining an open condition of the outlet opening for bucket elevations below said position, an inlet connection for admitting fluid and comprising a first fixed conduit extending upwardly within said bucket to an elevation which is substantially offset from the upper end of said bucket and which is within said bucket for all possible bucket positions, and a



gas-extraction outlet connection including a second fixed conduit extending upwardly within the bucket to an elevation which has a lesser offset from the upper end of said bucket, said second conduit extending externally of said body and inlet connection for conduct of extracted gas; whereby the difference in elevation for the respective offsets of said conduits from the upper end of said bucket serves to isolate vapor from liquid and to assure discharge of vapor substantially free of liquid in said second conduit, regardless of the extent to which the bucket may be called upon to buoyantly actuate said valve to control liquid discharge via the opening in said cover.

3,842,857

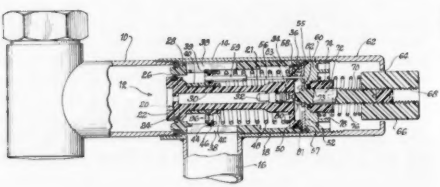
METERING VALVE CONSTRUCTION

Robert R. McCornack, 980 N. Broad St., Galesburg, Ill. 61401

Filed Apr. 6, 1973, Ser. No. 348,515

Int. Cl. F16k *31/143*

U.S. Cl. 137—242 **13 Claims**



1. In a metering valve for disposition in a tubular section between inlet and outlet portions of said section, said valve comprising a sleeve defining an open end and an open side wall, a piston assembly reciprocally movable in said sleeve and having a first piston head adapted to close said open end to prevent flow through said valve, and an actuating means for shifting said piston assembly to displace said first piston head and thereby open communication between inlet and outlet portions of said valve, said piston assembly defining an internal passage and a second piston head at the end of said passage, said second piston head forming a movable wall of a chamber into which fluid from said passage is adapted to flow, and a separate valve in said internal passage adapted to be opened by said actuating means whereby fluid enters said chamber to shift said second piston head, a metering orifice associated with said second piston head, resilient and pressure means for imparting return movement to said piston assembly whereby the fluid in said chamber is slowly discharged through said orifice to accomplish gradual return of said first piston head to seated position, the improvement comprising a bearing means situated within said sleeve slideably disposed within the side wall thereof, said bearing means defining a cylindrical opening with said piston assembly being received within said opening for reciprocal movement relative to the bearing means, said bearing means serving as a support for said piston assembly and for said resilient means thereby maintaining alignment of the piston assembly relative to said sleeve, a portion of the side wall of said sleeve consisting of spaced-apart web members to provide an outlet opening in the side wall, said bearing means comprising at least one element having a tubular section defining said cylindrical opening, and an externally formed flange portion extending outwardly from said tubular section, said flange portion being disposed within said sleeve.

3,842,858

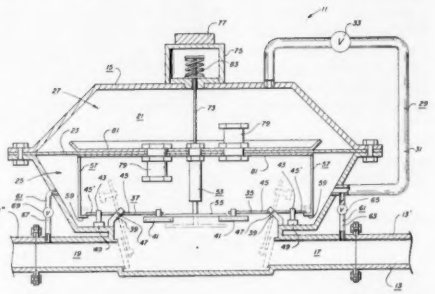
GAS VALVE

Frank E. Bobo, 212 Algee St., Tiptonville, Tenn. 38079

Filed Dec. 12, 1973, Ser. No. 424,157

Int. Cl. F16k *17/24*

U.S. Cl. 137—458 **10 Claims**



1. A valve means for closing a pressurized gas line when there is a sudden change in pressure of a substantial amount in the gas line, said valve means comprising:

a. body means for mounting intermediate the gas line, said body means having first and second passageways and an internal cavity for allowing gas to pass therethrough;

b. flexible diaphragm means mounted in said internal cavity of said body means for dividing said internal cavity into first and second portions;

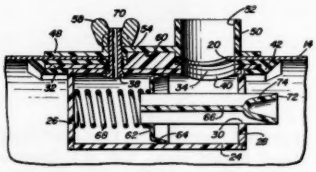
c. first equalization means located between said first and second portions of said internal cavity for allowing restricted equalization of slow pressure change between said first and second portions of said internal cavity;

d. first and second flap means mounted in said first portion of said internal cavity for movement between first positions away from said first and second passageways to allow gas to flow through said valve means and second positions adjacent said first and second passageways to prevent gas from flowing through said valve means;

e. activating means mounted on said disphragm means for causing said first and second flap means to move from said first positions to said second positions when the pressure in said first portion of said internal cavity sud-

denly changes a substantial amount causing said diaphragm to dilate.

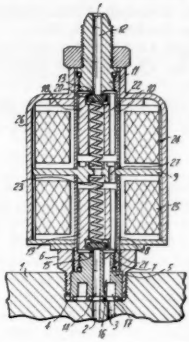
3,842,859
IRRIGATION PIPE GATE VALVE WITH FLOW CONTROL
Richard F. Reinke, Box 480, Deshler, Nebr. 68340
Filed Jan. 4, 1973, Ser. No. 321,039
Int. Cl. E02b *13/00*
U.S. Cl. 137—504 **15 Claims**



1. In an irrigation pipe having a discharge opening therein for discharging water, a flow gate for controlling the rate of discharge of water for maintaining a substantially constant volume of discharge from the pipe during pressure variation of the water in the pipe, said flow gate comprising a valve associated with the opening in the pipe for controlling discharge through the opening, means biasing said valve to an open position to enable maximum flow of water from the interior of the pipe to the exterior thereof, and means operatively associated with the valve for moving the valve toward a closed position against the resistance of the biasing means in response to volume of flow of water from the pipe for controlling the position of the valve in response to volume flow of water from the interior to the exterior of the pipe, said means operatively associated with the valve including a flow responsive member positioned in the flow path of the water on the downstream side of the valve, said flow responsive member including a plate in position for engagement by flowing water on the downstream side of the valve, means connecting the plate to the valve for moving the valve in accordance with movement of the plate, said plate being in the form of a piston, a cylinder receiving said piston, one end of the cylinder having an inlet opening, said valve being positioned in said inlet opening, said means connecting the piston and valve including a rod member rigidly interconnecting the piston and valve for moving the valve with the piston when water engages the piston and moves it longitudinally in the cylinder in response to volume flow.

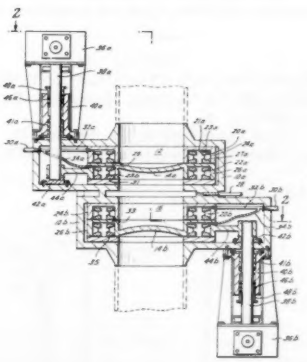
3,842,860
THREE-WAY VALVE FOR FLUIDS
Harald Stampfli, Geneva, Switzerland, assignor to Lucifer S.A., Carouge-Geneva, Switzerland
Filed Mar. 29, 1973, Ser. No. 345,851
Claims priority, application Switzerland, Apr. 4, 1972, 4886/72
Int. Cl. F15b *13/044*
U.S. Cl. 137—596.17 **4 Claims**

1. A three-way valve within an enclosure and adapted to control a further mechanism through an output channel fed with an operative fluid through an input channel or connected with an exhaust channel, said valve comprising a central tubular member, an axially bored closure member at each end of the opposite ends of said tubular member, each said closure member provided with a seat at its inner end, the bore in one of said closure members comprising said exhaust channel, the bore in the other of said closure members communicating with said input channel, a single ferromagnetic disc extending across and out of the tubular member and provided with an opening permanently ensuring the passage of the fluid through the tubular member, two magnetic cores slidably fitted inside the tubular member on the corresponding sides of the ferromagnetic disc, a valve member carried by each core on the side thereof facing outwardly, said valve members adapted to selectively close the corresponding seats with reference to the output channel, two electric windings surrounding the tubular



member and in registry with the corresponding cores, each of said windings selectively producing a magnetic field through said ferromagnetic disc moving the corresponding valve out of operative contact with the related cooperating seat and a passageway for the fluid, said passageway opening into said tubular member between said two seats.

3,842,861
DOUBLE DISC SEAL VALVE
Frank J. Jandrasi, and Howard A. Purvis, both of Houston, Tex., assignors to Tapco International, Inc., Houston, Tex.
Filed Sept. 27, 1973, Ser. No. 401,508
Int. Cl. F16k *19/00*
U.S. Cl. 137—628 **5 Claims**



1. A valve comprising,
a body having a flow passage extending therethrough,
a pair of disc valves arranged for movement to close and open the flow passage,
said disc valves being spaced apart from one another in the direction of flow in the flow passage thereby providing an intermediate pressure chamber between the discs when the discs are in closed position,
means for opening and closing the disc valves,

pressure-sealing means to seal the disc valves relative to the flow passage when the discs are in closed position, and

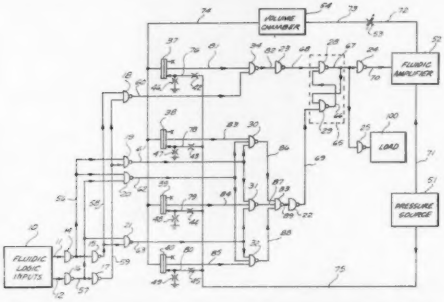
means for providing pressure to the pressure-sealing means and to the intermediate pressure chamber.

3,842,862

DIGITALLY TUNEABLE FLUIDIC OSCILLATOR

Robert F. O'Keefe, Trumbull, Conn., assignor to Automatic Switch Company, Florham Park, N.J.

Filed June 14, 1973, Ser. No. 370,122
Int. Cl. F15c *3/04, 4/00*
U.S. Cl. 137—814 **12 Claims**



1. A system responsive to various fluidic logic signals for providing a periodic fluidic signal, comprising:

a. a fluidic bistable device having two input ports and an output port;

b. means responsive to the logic signals for providing fluidic control signals, said responsive means including at least a pair of inverters responsive to the logic signals, and a plurality of NOR gates coupled to the inverters for providing the control signals; and

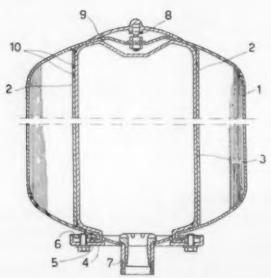
c. means, coupling the output port to the input ports, for sensing the binary states of the output port and applying fluid signals to the input ports to change the sensed state, thereby providing a periodic fluidic signal, said coupling means being responsive to said control signals for varying the rate at which fluid signals are applied to the inputs.

3,842,863

AUTOCLAVE TANK FOR HYDRAULIC LIFTING PLANTS

Renzo Ghiotto, 90 Via Matteotti, Montecchio Maggiore (Vicenza), Italy

Filed Nov. 14, 1972, Ser. No. 306,379
Claims priority, application Italy, July 11, 1972, 85596/72
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **1 Claim**



1. A round pressure tank vessel comprising:

inner and outer vessel walls;

an elastic envelope within the vessel connected to a single external opening and containing liquid;

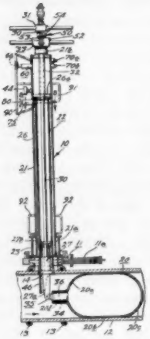
a rigid perforate tubular member within the vessel extending along the vessel length and containing said envelope; gas under pressure in a cavity between the vessel walls and the tubular member; and a gas pressure control valve for introducing gas through the vessel wall whereby gas pressure on the outside of the envelope is transmitted there through to the liquid to maintain the pressure thereof.

3,842,864

STOPPING APPARATUS FOR PIPE LINES

Peter S. Riegel; Ronald Legue, both of Columbus; Leslie F. Nikodem, Grove City, and Willard Slay, Worthington, all of Ohio, assignors to American Gas Association, Inc., Arlington, Va.

Continuation of Ser. No. 193,662, Oct. 29, 1971, abandoned. This application Mar. 23, 1973, Ser. No. 344,235
Int. Cl. F16l *55/12*
U.S. Cl. 138—93 **16 Claims**

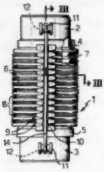


1. A line-stopper comprising: an inflatable bag having a normally collapsed configuration permitting insertion and withdrawal through a lateral port in a pipe and having an expanded configuration for engaging the inside of the pipe to block fluid flow therethrough, a hollow elongated insertion tube slidably receiving the bag in its collapsed configuration, a plunger slidably contained in said insertion tube, means connected to one end of said plunger to displace the plunger in opposite directions in the tube for inserting and withdrawing said bag, means providing a rigid extension on said bag, knuckle means coupling said rigid extension to the other end of the plunger and mounting said extension to pivot on an axis transverse to the path of movement of the plunger between one position coaxial with the insertion tube when said bag is collapsed and said knuckle means is in said insertion tube and another position aligned with the pipe when the knuckle means is in the pipe and the bag is disposed inside the pipe, and means providing fluid communication through said knuckle means between said bag and a source of pressure fluid, whereby the bag may be inserted in proper operating relation with respect to the pipe upon axial movement of the plunger relative to the insertion tube.

3,842,865
EXPANSION COMPENSATOR FOR LARGE ANGULAR MOVEMENTS

Paolo Torricelli, Pinto Torinese, Turin, Italy, assignor to Compagnia Italiana Tubi Metallici Flessibili S.p.A., Turin, Italy

Filed Nov. 16, 1972, Ser. No. 307,290
Claims priority, application Italy, July 22, 1972, 69394/72
Int. Cl. F16l *27/10, 51/02*
U.S. Cl. 138—121 **5 Claims**

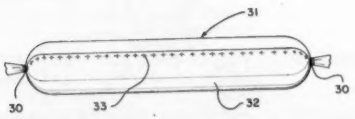


1. Compensator for large angular movements, comprising:
a deformable bellows-shaped member, the walls of which are undulatory such as to form a series of ridges and grooves of substantially sinusoidal configuration, and the ends of which are integrally connected with sleeves;
a plurality of annular members, each annular member encircling a different one of said grooves of said bellows-shaped member and each provided with two diametrically opposed projections, said projections having a centrally disposed slot formed therein and the cross-sectional configuration of each projection decreasing from the slot towards the side ends, said annular members being disposed so that a diametric plane, passing through the centroidal axis of said compensator, will pass through all said slots;
a pair of flexible and inextensible means disposed in a diametrically opposite position with respect to each other and each comprising a continuous element provided with two central parallel and contiguous sections disposed inside said slots and with two curved end sections connecting said central sections, there being disposed inside said end sections means for anchoring said flexible means to said sleeves, said flexible and inextensible means providing a constraint for said compensator in order to allow the axes of the sleeves of said bellows-shaped member, subjected to an internal pressure, to form an angle with respect to each other, solely in the plane perpendicular to said diametrical plane passing through said slots, and that the axis of said compensator is disposed solely along a line having a constant curvature in said perpendicular plane.

3,842,866
PLASTIC WELDED TUBE

Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Filed June 11, 1973, Ser. No. 368,747
Int. Cl. F16l *11/06*
U.S. Cl. 138—128 **5 Claims**

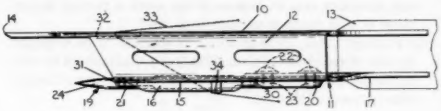


1. In a polypropylene container, the improvement comprising a pair of polypropylene sheet portions in facing relation, and a quantity of vinyl interposed between and welded to said sheet portions.

3,842,867
WEFT INSERTING CARRIER

Richard L. Volpe, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1973, Ser. No. 343,797
Int. Cl. D03d *47/22*
U.S. Cl. 139—122 N **2 Claims**

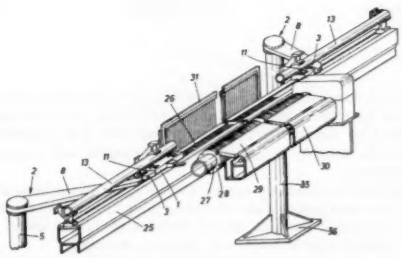


1. For a shuttleless loom of the type for inserting single picks of weft yarn into separate sheds formed by warp threads, a weft inserting carrier which comprises front and rear side walls with a top planar surface interconnected therewith, a weft guide means in said rear side wall through which the weft yarn passes, said weft guide means being effective to guide the weft between said first and second locations and a weft receiving and clamping means carried by said front wall for clamping the weft end when the weft is being inserted into the warp shed, said clamping means including a guide finger fixed to said front wall, a laterally extending lip forming a part of the latter, and a weft engaging member carried by said guide finger, biasing means formed integrally with said weft engaging member to urge said member into yieldable contact with said lip in a manner such that the weft is subjected to increasing pressure upon insertion between said member and said lip.

3,842,868
SHUTTLE-REVERSING MEANS

Walther Filter, Langenhagen, Germany, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Establissement Wanderfield & Co., Schaan, Liechtenstein

Filed Sept. 7, 1973, Ser. No. 395,298
Claims priority, application Austria, Sept. 15, 1972, 7913/72
Int. Cl. D03d *49/44, 49/54*
U.S. Cl. 139—134 **10 Claims**



1. In a flat weaving machine which comprises an electrically operable travelling-field race and a gripper-type shuttle, which is reciprocable along said race, the provision of means for reversing the movement of said shuttle at each end of said race, said means comprising
two energy-storing spring devices disposed at opposite ends of said race, each of said energy-storing spring devices comprising a torsion bar, which extends in a plane that is normal to said race, and a radial stressing arm, which is connected to said torsion bar and has a free end, said torsion bar being adapted to be stressed by a pivotal movement of said stressing arm in a predetermined sense,

to be in an unlocked condition when stressed, and to relax so as to impart to said stressing arm a pivotal movement in a sense opposite to said predetermined sense,

two buffer guides extending in the longitudinal direction of said race,

two buffers, each of which is freely slidably guided by one of said buffer guides along the same and contacts the free end of one of said stressing arms and is engageable by said shuttle and adapted to transmit force from said shuttle to said stressing arm to impart to the same a pivotal movement in said predetermined sense, and

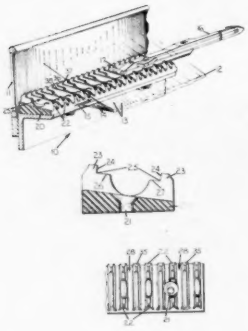
two resilient stops, each of which is adapted to be engaged by one of said buffers under the force transmitted to said buffer by the associated torsion bar through the stressing arm connected thereto.

3,842,869

TAPEGUIDE RACEWAY FOR RAPIER LOOM

Ralph R. Champagne, Woonsocket, R.I., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 9, 1973, Ser. No. 404,151
Int. Cl. D03d *49/60*
U.S. Cl. 139—188 **4 Claims**



1. An improved guide raceway for use on shuttleless looms of the type where weft insertion into the warp shed is accomplished by yarn carriers that are moved into and withdrawn from the shed by reciprocating flexible tapes: said raceway comprising;

a. an elongated body portion for mounting on the loom lay;

b. a first series of elements extending upwardly from said elongated body at spaced intervals along the length of said elongated body, said elements including,

1. means forming a pair of opposed shoulders that define the lateral limits of the raceway for receiving the tape, and

2. means defining an individual tape supporting surface adjacent each of said pair of shoulders, and

c. a second series of elements extending upwardly from said elongated body at spaced intervals alternating with the elements of said first series of elements, the elements of said second series including;

1. means forming a shoulder defining the lateral limit of the raceway for receiving the tape on one side only, and

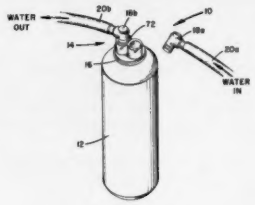
2. means defining a tape supporting surface that extends from said shoulder a distance sufficient to provide support for the tape and for the yarn carriers.

3,842,870

QUICK-DISCONNECT MANIFOLD ASSEMBLY

William R. Burgess, El Paso, Tex., assignor to Continental Water Conditioning Corporation, El Paso, Tex.

Continuation of Ser. No. 56,549, July 20, 1970, abandoned.
This application May 15, 1972, Ser. No. 253,478
Int. Cl. B65b *3/18*
U.S. Cl. 141—286 **33 Claims**



1. A quick disconnect manifold assembly for a tank in which a fluid may be treated, which manifold assembly is adaptable to a variety of operating functions and which comprises:

a. manifold means adapted to be sealably attached to the tank through a single opening therein, at one end thereof, and having only an inlet opening and an outlet opening which extend through said manifold means and open into the interior of the tank;

b. a first substantially rigid reusable adaptive means releasably disposed in an adjustable position in the inlet opening for establishing a flow path into the interior of the tank;

c. sealing means for sealing said first substantially rigid reusable adaptive means in said inlet opening;

d. a second adaptive means sealably disposed in an adjustable position in the outlet opening for establishing a second flow path from the interior of the tank;

e. fluid conduit means connected to said manifold and communicating with said outlet opening, said fluid conduit means extending substantially to the other end of the tank for channelling fluid from within the tank into the outlet opening and the second adaptive means; and

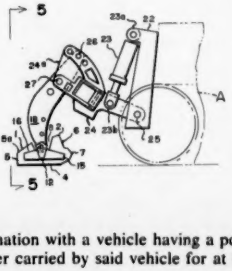
f. retaining means extending through the manifold means and engaging said first adaptive means for releasably retaining said first adaptive means in one of a number of selected positions within the inlet opening.

3,842,871

TREE STUMP SPLITTING ASSEMBLY

Arthur A. Jurelwicz, 7244 Robindale, Dearborn Heights, Mich. 48127

Filed Aug. 2, 1973, Ser. No. 385,079
Int. Cl. B27c *9/00;* **A47j** *49/02*
U.S. Cl. 144—2 N **8 Claims**



1. The combination with a vehicle having a power source, and a tool carrier carried by said vehicle for at least up and

down travel thereon, and a power transmission from said power source to said carrier to effect such travel, of a tree stump splitting assembly, including,

a blade, adapted to be mounted on said carrier to be operably carried in said up and down travel,

at least one ear secured to said blade,

a hole formed in said ear,

a hole formed in said carrier, registrable with said hole in said ear, and

a connecting pin or the like received in said holes.

3,842,872

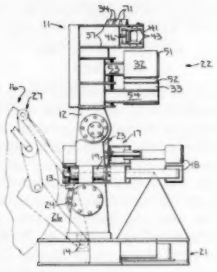
DELIMBER ASSEMBLY FOR TREE HARVESTING MACHINES

Raymond L. Moser, Tremont, and Dorrance Oldenburg, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuat'on-in-part of Ser. No. 211,300, Dec. 23, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,814

Int. Cl. A01g *23/08*

U.S. Cl. 144—3 D **21 Claims**



1. A vehicular mounted tree processing machine comprising an elongated frame pivotably mounted on a vehicle for rotation about a horizontal axis, a shear mechanism being arranged toward one end of the frame, a drive mechanism arranged on a midportion of the frame for moving a tree along a processing path through the tree processing machine, and a delimber assembly arranged toward the other end of the frame in operating alignment with the drive and shear mechanisms, the delimber assembly including an elongated flexible blade means supported at its center by the frame, spring means being operatively coupled between the frame and the respective free ends of the elongated blade means, the spring means tending to urge the free ends of the elongated blade mean away from the frame, a pair of arms pivotably mounted at respective sides of the frame, each having an impact shearing blade at the free end thereof, and motor means effectively coupled between the frame and arms for moving the arms into a first position to provide an opening therebetween for receiving a tree against the elongated flexible blade means and for urging the arms toward each other, thereby allowing the impact shearing blades and elongated flexible blade means to encircle and engage the tree.

3,842,873

CUTTER HEAD FOR A BARK REMOVING MACHINE

Antti Tapani Valo, 08100 Lohja 10, Finland

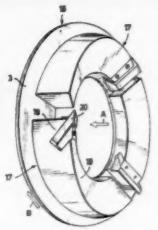
Filed Mar. 6, 1973, Ser. No. 338,498

Claims priority, application Finland, Mar. 9, 1972, 629/72

Int. Cl. B27g *13/00*

U.S. Cl. 144—218 **6 Claims**

1. A cutter head for a bark removing machine having a ring-shaped hole-rotor through which logs to be debarked are passed longitudinally, the cutter head comprising a plane ring-shaped supporting disc to be fastened at the input side of the rotor and provided with at least one and preferably several mutually spaced cutter blades projecting from the disc, each being provided with a support surface associated with the blade, characterized in that the cutter head comprises separate, mutually spaced guiding elements fastened to the plane ring-shaped supporting disc and forming separate support surfaces located on a conical surface and facing the approaching log to be debarked, said guiding elements further being separated from each other by slits in which said cutter blades are mounted and through which the chips are removed.



3,842,874

METHOD AND APPARATUS FOR PRESHAPING RAW LOGS

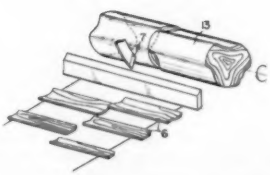
Nagaoka Noriyuki, and Niimi Haruo, both of Aichi, Japan, assignors to Kabushiki Kaisha Taihei Seisakusho aka Taihei Machinery Works, Inc., Nagoya-shi, Japan

Filed July 12, 1972, Ser. No. 271,201

Claims priority, application Japan, July 13, 1971, 46-51480; July 15, 1971, 46-52549

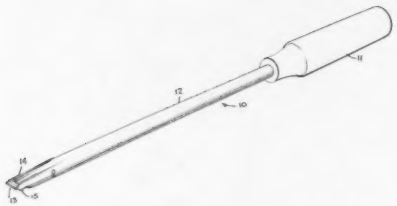
Int. Cl. B27l *5/02*

U.S. Cl. 144—309 R **3 Claims**



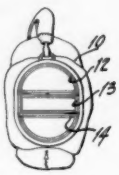
1. A method of preliminarily shaping a raw log into columnar shape for subsequent economical rotary cutting thereof to produce veneer pieces having a definite rectangular shape, which comprises detecting that point in each of the intersections between the outer surface of said log and plurality of longitudinal sections passing through the center axis of the log which is nearest said center axis and cutting away the outer surface part of the log along element lines each alined in parallel to the center axis and passing through a respective one of said detected points while carrying out profiling based on said detected points thereby to preshape the log into a columnar shape of substantially the same planar shape in any cross section thereof.

3,842,875
SCREWDRIVER
Ugo Tascone, 76b Hickory Rd., Port Washington, Long Island, N.Y. 11050
Filed Oct. 19, 1972, Ser. No. 299,161
Int. Cl. B25b 15/00
U.S. Cl. 145—50 C 3 Claims



1. A screwdriver adapted to engage and support a screw which comprises an elongated rod-like member, a tongue disposed at the screw engaging end of said rod-like member for engaging the slot in the head of a screw, said tongue being perpendicular to the longitudinal axis of said rod-like member and being characterized in that it is of a length sufficient to protrude into at least one-half of the depth of the slot in the screw, and a pair of abutting shoulders disposed adjacent the area where said tongue is connected to said rod-like member and located at different distances from the free end of said tongue, each of said abutting shoulders being adapted to engage the head of the screw supported by said tongue so as to hold the screw at the desired angle with respect to the longitudinal axis of said rod-like member when held in a substantially horizontal position and because of being located at different distances from the free end of said tongue cause a screw in engagement therewith to have its longitudinal axis with respect to said longitudinal axis of said rod-like member at a different angle than that of a screw engaged with the other respective shoulder.

3,842,876
COMPARTMENTAL ADAPTERS FOR GOLF BAGS
Joseph Cristelli, 85 Ruckman Rd., Hillsdale, N.J. 07642
Filed Sept. 5, 1972, Ser. No. 286,212
Int. Cl. A63b 55/00
U.S. Cl. 150—1.5 R 10 Claims

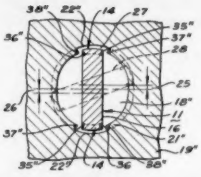


1. In a golf bag having a predefined internal volume for accommodating golf clubs and of the type having an opened top end for inserting said golf clubs and a closed bottom end, said opened top end including at least one rod-like separator thereacross, the combination therewith of apparatus for fully dividing the club containing volume of said bag into a plurality of compartments comprising:

a. a longitudinal, cylindrical frame member having a cross-section relatively congruent with the cross-section of said bag as defined by the area enclosed between the periphery of said bag and said rod-like separator, said frame member having an open top end and a closed bottom end, and

b. a cover member adapted to cover the major outside surface of said frame member to thereby form a composite member therewith, such that when said composite member is inserted into said golf bag, said internal volume is divided into at least two distinct volumetric areas each of which is capable of accommodating a plurality of clubs less than the total necessary to participate in the sport of golf.

3,842,877
QUICK FASTENING SCREW DEVICE
Alton M. Andrews, 1522 San Pablo Ave., Lafayette, Calif. 94612
Filed June 5, 1972, Ser. No. 259,753
Int. Cl. F16b 39/30
U.S. Cl. 151—14 R 4 Claims

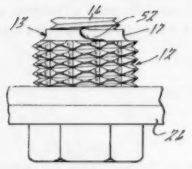


1. A combination of a screw member and a female member having a bore for receiving said screw member; said screw member comprising a shank having a duality of threaded sectors and a duality of flat surfaces extending longitudinally of said shank and being chords which cut off cylindrical portions of said shank between said threaded sectors; said bore having a duality of threaded sectors with internal threads complementary to and engageable by the threads of said shank, and a corresponding duality of unthreaded sectors interposed between and alternating with said threaded sectors, said unthreaded sectors extending longitudinally of said bore; said bore of the female member having a long diameter and a short diameter to form an oval in cross section, said unthreaded sectors extending longitudinally along said bore at the long diameter thereof, and said threaded sectors being positioned along the short diameter of said bore, the shank of said screw being insertable into said bore with the threaded sectors of said screw being aligned transversely with the long diameter of said bore and without engagement between the threads of the shank and threads of the bore, the transverse length of the shank being greater than the shorter diameter of the bore to the extent that rotation of the shank in the bore will be limited when the threaded portions of the members are engaged with each other; said threaded sectors of the female member being of greater arcuate width than the threaded sectors of the shank and being spaced from each other circumferentially sufficient to permit the threaded portions of the same member to pass longitudinally therebetween; said threaded portions of both members have threads with their transverse ends beveled along the upper and lower surfaces of each thread, the upper and lower bevels formed thereby meeting at a radially extending relatively sharp edge.

3,842,878
THREAD LOCKING MEANS
Morris J. Duer, 4157 Mar-Moor Dr., Lansing, Mich. 48917
Continuation of Ser. No. 191,198, Oct. 21, 1971, abandoned. This application May 10, 1973, Ser. No. 358,854
Int. Cl. F16b 39/02
U.S. Cl. 151—21 C 3 Claims

1. A lock nut comprising a metallic body member, an integral lock portion formed at one end of said body member, said lock portion having outside dimensions less than the corresponding outside dimensions of said body member, said body

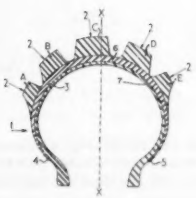
member and lock portion defining a bore provided with an internal thread extending throughout the length of said body member and said lock portion and adapted to be applied to a mating threaded member, and an externally threaded portion on said body member having an external thread extending throughout the length of said body member, said internal thread being of one helix angle and said external thread being of a larger helix angle, said external thread being adapted to receive an internally threaded tool member effective to deform said lock portion of said nut beyond the elastic limit thereof so as to reduce permanently the pitch diameter of said internal thread in said lock portion of said nut upon rotation of said tool member relative to said lock nut.



3,842,879
PNEUMATIC TIRES

Anthony Mark Mills, Sutton Coldfield; William Wortley, Erdington, and Grahame John Barton, Curdworth, all of England, assignors to Dunlop Holdings Limited, London, England

Continuation of Ser. No. 110,974, Jan. 29, 1971, abandoned. This application Nov. 7, 1972, Ser. No. 304,399
Int. Cl. B60c 11/06
U.S. Cl. 152—209 R 13 Claims



1. A pneumatic tire having a tread comprising a plurality of spaced-apart ground-contacting blocks, the blocks nearer the tread crown region having a longer transverse ground-contacting dimension a shorter circumferential ground-contacting dimension and a greater depth, measured from the ground-contacting surface of the blocks to the radially outermost surface of the tire carcass, than the blocks closer to the tread shoulder region.

3,842,880
VEHICLE TIRE INTENDED TO BE FITTED WITH ANTI-KID DEVICES AND TIRE MATRIX FOR MANUFACTURING SAME

Sulo Paavo Johannes Keinanen, Nummela, Finland

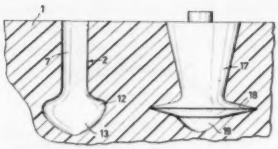
Filed Aug. 28, 1972, Ser. No. 284,064
Claims priority, application Finland, Aug. 27, 1971, 2399/71
Int. Cl. B60c 11/16
U.S. Cl. 152—210 24 Claims

1. A vehicle tire the tread of which has a purposeful number of openings (2,5,6) formed by respective walls in said tread and projecting substantially perpendicularly inwards from the tread and shaped for accommodation of anti-skid devices (17) that have a flange extension (18) at their bottom end, wherein each of said walls comprises:

a section (7,10,11) extending inwardly from the tread surface,

a lateral extension (12,15,16) at the bottom end of said section and inwardly extending therefrom a predetermined distance for breadth and depth-wise accommodating the said flange extension of the device,

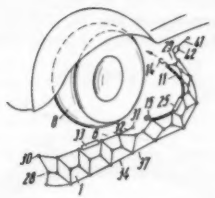
and underneath the said extension, viewed longitudinally in direction of the opening, continued inward extension means (13,24,14) in said wall for forming at least one air pocket (19,22,23) so that when the flange of the said device is located in position in the said lateral extension (12,15,16) said air pocket extension means forms at least one air cushion underneath the flange.



3,842,881
TIRE CHAIN

Anton Muller, Unterkochen; Hubert Konig, Aalen, and Ludwig Strobel, Unterkochen, all of Germany, assignors to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany

Filed July 6, 1972, Ser. No. 269,308
Claims priority, application Germany, July 7, 1971, 2133801
Int. Cl. B60c 27/12
U.S. Cl. 152—213 A 14 Claims



1. In an antiskid chain for vehicle tires: a running portion adapted to engage the tread of the tire, an inner ring portion connected to one side of said running portion and adapted to be disposed on the axially inner side of the tire, an outer ring portion connected to the other side of said running portion and adapted to be disposed on the axially outer side of the tire, an arcuate assembly member forming a part of said inner ring portion, pairs of cooperating elements of detachable connector means on the ends of said assembly member and on the ends of the other part of said inner ring portion, and said outer ring portion including means for adjusting the diameter thereof, said running portion including flexible elements extending angularly to the plane of the tire and connected to circumferentially spaced points on said inner and outer ring portions, said points on the axially outer side of the tire falling substantially on a circle, said outer ring portion comprising a flexible ring element on the order of a third longer than the circumference of said circle and connected to the said points on the outer side of the tire.

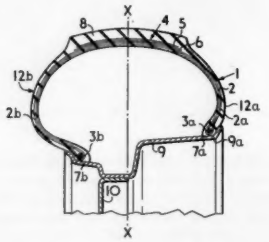
3,842,882
PNEUMATIC TIRE HAVING SIDEWALLS OF UNEQUAL LENGTH

Vernon E. Gough, Croyde, and Roy E. S. Waller, Sutton Coldfield, both of England, assignors to The Dunlop Company Limited, London, England

Continuation of Ser. No. 858,957, Sept. 18, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 180,182

Int. Cl. B60c *5/00*

U.S. Cl. 152—352 **5 Claims**



1. A pneumatic tire having sidewalls of unequal length and a carcass having at least one ply of reinforcing cords, the cross-sectional shape of the carcass conforming, over the range of inflation pressure from uninflated to fully inflated, to the equilibrium cross-sectional shape for a carcass of corresponding width and cord angle, each sidewall terminating in a bead at a position radially inwardly of the point at which the equilibrium shape of the sidewall becomes perpendicular, when viewed in cross-section, to the axis of rotation of the tire.

3,842,883
RADIAL-PLY TIRES

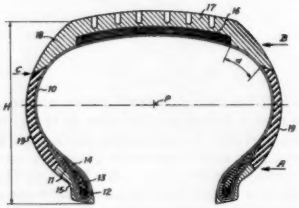
Yves Masson, Paris, and Henri Greiner, Conflans-Ste-Honorine, both of France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Paris, France

Continuation-in-part of Ser. No. 163,347, Aug. 16, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,773

Claims priority, application France, July 24, 1970, 70.27542

Int. Cl. B60c *9/02*

U.S. Cl. 152—354 **4 Claims**



1. A pneumatic tire casing comprising two beaded edge portions incorporating reinforcing bead wires, a radial-ply carcass extending between said bead portions and having its edges turned up around said bead wires, a tread portion including a central part and lateral parts applied to the outer part of the side of said carcass, a reinforcing belt located between said tread portion and said carcass and having a width approximately equal to the width of the central part of said tread portion, said lateral parts extending beyond the side edges of said reinforcing belt, said central tread portion and said reinforcing belt being disposed one above the other, and two stiffening side wall strips each applied to the outer face of one side of said carcass and extending radially from a point adjacent the bead edge of said carcass to a point beyond the centre of the height of the tire section and over at least 2/3 of the height of said section, said side wall strips being made from a rubbery mixture having a modulus of elasticity not less than 40 kg/cm^2 at 100 percent elongation and which incorporates at least 40 parts of carbon black per 100 parts of rubber, and at least 35 parts per 100 parts of rubber, of a fine polyolefine powder having a molecular weight greater than 500,000.

3,842,884
RADIAL PLY TIRE WITH REINFORCING BELT

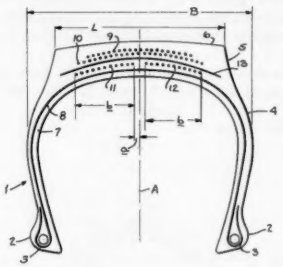
Marcel J. Bertrand, Grivegnee-Liege, Belgium, assignor to Uniroyal Aktiengesellschaft, Aachen, Germany

Continuation of Ser. No. 206,424, Dec. 9, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,800

Claims priority, application Germany, Dec. 21, 1970, 2062941

Int. Cl. B60c *9/18*

U.S. Cl. 152—361 R **7 Claims**



1. A pneumatic tire comprising: a carcass including a pair of beads and at least one ply having cords extending from one bead to the other and disposed substantially radially of the tire;

a reinforcing belt extending substantially circumferentially of the tire over said carcass;

tread, shoulder and sidewall portions of elastomeric material over said carcass;

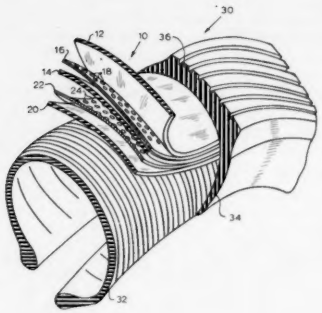
a pair of reinforcing strips in the same layer between said carcass and said tread portion and spaced on both sides of the equator of the tire and extending toward said shoulder portions, each strip being on only one side of said equator and each strip extending substantially circumferentially of the tire and having cords obliquely disposed with respect to the equator of the tire and which slant in opposite directions with respect to the equator of the tire said spaced reinforcing strips being each spaced a distiance between 2.5 millimeters and 15 millimeters from said equator of the tire, said spaced reinforcing strips being each spaced a distance between 2.5 millimeters and 15 millimeters from said equator of the tire;

and a reinforcing strip unincorporated in said reinforcing belt and in intimate contact with and entirely covering said pair of reinforcing strips and having cords disposed substantially radially of the tire at a greater angle with respect to said equator of the tire than said obliquely disposed cords of said pair of reinforcing strips.

3,842,885
COMPOSITE BREAKER BELT FOR PNEUMATIC TIRES

Clarence F. Alban, 197 Breezeway, Brighton, Mich. 48116

Filed May 16, 1973, Ser. No. 360,771
Int. Cl. B60c 9/20
U.S. Cl. 152—361 R 19 Claims



1. A pneumatic tire comprising:
a tire carcass;
an elastic outer casing surrounding a portion of said carcass and including a tread about the periphery thereof;
a breaker belt interposed between said tread and said carcass, said breaker belt comprising:
opposing elastic layers;
a sheet interposed between said layers, said sheet having a plurality of perforations therein and comprising a material having a relatively high modulus of elasticity with respect to said layers and wherein
the ratio of the thickness of said layers to the thickness of said sheet is given by

$$t_1/t_2 \approx E_2/E_1$$

where:
t_1 = the composite thickness of said layers,
t_2 = the thickness of said sheet,
E_1 = modulus of elasticity for said layers,
E_2 = modulus of elasticity for said sheet.

3,842,886
TIRE REPAIR BODY

Alois Felden, Munchen, Germany, assignor to Stahlgruber, Otto Gruber & Company, Munchen, Germany

Filed Sept. 24, 1971, Ser. No. 183,577
Claims priority, application Germany, Sept. 29, 1970, 2047735. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.
Int. Cl. B60c 21/02
U.S. Cl. 152—370 9 Claims

1. A tire repair body for repairing tear or hole-shaped injuries in vehicle-tires consisting of a patch adapted to cover the injured area on the interior of the tire and a shaft of composite material, said shaft comprising elongated supporting elements of a vulcanized elastic rubber and layers of an unvulcanized pliable mass surrounding at least most of the surface of said supporting elements, said vulcanized pliable mass being adapted to remain uncured and pliable; said shaft in its normal condition being bent in a U-shape with its ends connected to said patch so as to form a loop remote from the patch to accommodate an inserting tool, the legs of the U-shape shaft being in engagement with each other and otherwise unconnected to each other except for their connection to the patch and to the loop, said shaft thereby comprising a plug portion connected to said patch and a loop portion remote from said patch, and said plug portion and said loop portion being of one-piece integral construction with no distinct dividing line therebetween.

3,842,887
TIRE REPAIR ELEMENT

Joseph B. Mendes, 26 Riviera Dr., Agawam, Mass. 01001

Filed Oct. 2, 1972, Ser. No. 294,088
Int. Cl. B60c 21/06
U.S. Cl. 152—370 1 Claim

1. A device for repair of a puncture in a resilient elastomeric tire comprising:
an expandable cylindrical rubber plug having a longitudinal central aperture therethrough,
a threaded contracting rod extendable through the plug aperture and having a flanged base of a diameter no greater than the diameter of the plug located adjacent one extremity of the rod in embracement with the respective end of the plug,
the contracting rod and circumscribing plug being unitarily insertable through the puncture and extendable outboard and inboard of the tire walls on opposite sides thereof with the base of the rod being disposed at the inboard side of the tire,
and a nut threadedly engageable with and walkable downwardly on the contracting rod at the opposite extremity thereof as longitudinal movement of the contracting rod directionally toward the outboard side of the tire is achieved in a plug-compressing manner for forming an increased thickness of the plug in the area between the rod base and tire as the nut is walked down the contracting rod toward the enlargement.

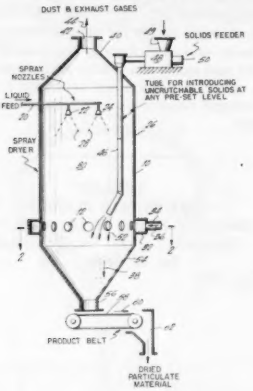
3,842,888
APPARATUS FOR INTRODUCING INGREDIENTS INTO A SPRAY DRYING TOWER

Edward J. Gibbons, Fanwood, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 885,079, Dec. 15, 1969, abandoned. This application Feb. 1, 1973, Ser. No. 328,750
Int. Cl. B01d 1/16
U.S. Cl. 159—4 CC 8 Claims

1. A spray tower for producing adjustable density products comprising a drying body having sides provided with a plural-

ity of holes, nozzle means for spraying hydrated liquid material into said body, means for effusing hot drying gas through said holes to countercurrently flow against said hydrated liquid material to dry said liquid material into dry particulate form, said body having a top provided with a mouth wherein



said drying gas exits, a bottom provided with an outlet wherefrom said dry particulate material is removed, a cylindrical tube extending through said top and having a discharge opening that is adjustable to any pre-set height level within said body between said holes and said nozzle means and a feeding means for feeding dry solids into said cylindrical tube.

3,842,889

IMPROVEMENTS IN OR RELATING TO WINDOW BLINDS, ESPECIALLY FOR AIRCRAFT PASSENGER CABINS

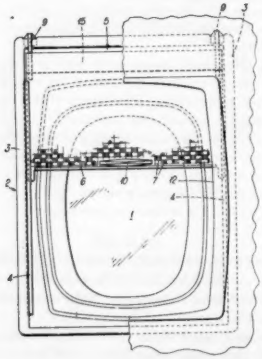
David Walter Jones, Shotton, Wales, assignor to Hawker Siddeley Aviation Limited, Kingston upon Thames, Surrey, England

Filed Feb. 2, 1973, Ser. No. 329,163

Claims priority, application Great Britain, Feb. 8, 1972, 5887/72

Int. Cl. E06b *9/08*

U.S. Cl. 160—26 **1 Claim**



1. A roller-less blind assembly for a vehicle window, comprising a flexible blind made up of numerous cross slats connected edge to edge by interwoven longitudinal tapes, with a lightweight spring strip bonded along each longitudinal side margin of said blind thereby further connecting the slats, antifriction material, such as polytetrafluorethylene, covering said spring strips, side guide rails having channels within which the blind side margins including said spring strips are constrained to slide, said spring strips having a naturally coiled configuration such that where the blind runs out of the side guide rails at one end it is caused to roll up by the springs, and a blind box at said one end to receive said rolled up portion of the blind, with arcuate resilient brackets in said blind box encircling said rolled-up portion at opposite ends thereof, to retain said rolled-up portion in predetermined position in said blind box without the provision of a blind roller, and wherein said springs have a constant spring rate and friction pads are provided in said guide rails to act on said blind side margins such that the blind remains stably in any position of extension to which it is manually adjusted.

3,842,890

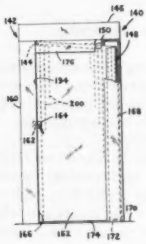
COILABLE CLOSURE DEVICE

Hyman Kramer, 30 Jupitor St., St. Colonia, N.J. 07067

Filed Feb. 9, 1973, Ser. No. 330,953

Int. Cl. A47h *1/124*; **E06h** *9/08*

U.S. Cl. 160—26 **4 Claims**



1. A storagable closure device for a door opening comprising:

a. a frame connected across the door opening,

a storage chamber formed on one side of the frame,

c. a top guide member pivotally connected to the frame,

d. a plastic closure member coilably stored in the storage chamber,

e. the closure member having a slanted top with a folded portion formed on at least one side of the top whereby on coiling of the closure member the folded portion is on the slant and out of the way of the coil to permit a tight roll, and

f. the folded portion is received into the guide member and on closure of the closure member will cause the guide member to pivot to conform to the angle of the slanted top of the closure member.

3,842,891

SHUTTER-BLIND DEVICE

Samuel F. Kinnroth, 351 W. 24th St., Apt. 20-A, New York, N.Y. 10011, and Irving I. Friedman, 100-22 Erdman Pl., Bronx, N.Y. 10475

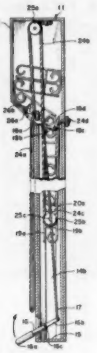
Filed Aug. 27, 1973, Ser. No. 391,969

Int. Cl. E06b *9/00*

U.S. Cl. 160—35 **24 Claims**

1. A shutter-blind device comprising in combination: a shutter strip extending axially length-wise in a plane and having opposite edges one of which defines a substantially blunt abutment and the other of which is arcuate curving circularly beneath the strips main body between the opposite edges, and spaced from the arcuate edge and extending from the strip's

underside there being joining means extending substantially downwardly for joining with a substantially similar shutter strip structure in an inverted position such that a curved edge



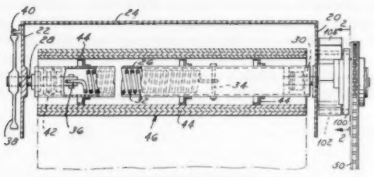
of one strip is adjacent and space from a blunt edge of the other strip structure and that the remaining blunt edge of the one strip is adjacent and spaced from a curved edge of the other strip structure.

3,842,892

ROLLING DOOR OPERATING MECHANISM

Frank R. Stieler, Warren, Mich., assignor to RCM Corporation, Warren, Mich.

Filed July 27, 1973, Ser. No. 383,125
Int. Cl. E06b *9/08*
U.S. Cl. 160—133 **6 Claims**



1. In a rolling door operating mechanism including rollable interlocked slats mountable for movement between raised and lowered positions and counterbalance means providing a bias against movement of the door to its lowered position, including a roll cylinder mounted to support said door in various positions, a shaft to drive said cylinder and a drive means, that improvement which comprises:

a. a pair of blocks on said shaft positioned axially adjacent each other,

b. means to limit circumferential motion of said blocks relative to each other wherein rotative driving of a first of said blocks will effect a rotative driving of the second of said blocks and a driving of said shaft,

c. a plurality of latch bars extending tangentially over said blocks adapted to cooperate with a plurality of stop recesses formed in said second blocks, and

d. a plurality of radial protuberances on said first block to cam said latch bars away from said stop recesses in a first relative position of said blocks and to allow said latch bars to engage said recesses in a second relative position,

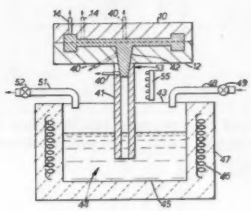
wherein a driving force on said first block will maintain said blocks in said first position, and a driving force on said second block from the roll cylinder will shift said blocks to a second relative position to allow said latch bars to engage to prevent precipitous descent of a rolling door on said roll cylinder.

3,842,893

METHOD AND APPARATUS FOR CONTROLLING LOW PRESSURE DIE CASTING

Stuart Eric Booth, Surrey, England, assignor to The British Non-Ferrous Metals Research Association, London, England

Filed Oct. 27, 1972, Ser. No. 301,516
Claims priority, application Great Britain, Oct. 28, 1971, 50207/71
Int. Cl. B22d *17/32*
U.S. Cl. 164—4 **7 Claims**



1. In a casting method, the steps of:

introducing a molten casting material into a die cavity through an inlet passage by applying gaseous pressure thereto;

sensing the temperature of the casting material by measuring the temperature of the casting material at at least one location in said inlet passage and at at least one location in said die cavity;

generating a signal in response to the sensing of predetermined temperature conditions in said casting material, said predetermined temperature conditions comprising the situation when each of the measured temperatures has fallen below a predetermined level; and

using the generated signal to terminate the application of said gaseous pressure to the molten casting material.

3,842,894

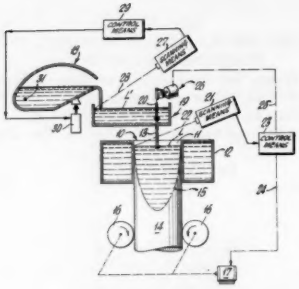
AUTOMATIC MEANS FOR REMOTE SWEEP-SCANNING OF A LIQUID LEVEL AND FOR CONTROLLING FLOW TO MAINTAIN SUCH LEVEL

Glen R. Southworth, Boulder, Colo.; Peter M. Robbins, Patagonia, Ariz., and Frank Wills, Mattituck, N.Y., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,321
Int. Cl. B22d *17/32*
U.S. Cl. 164—4 **24 Claims**

1. The method of using a radiation-responsive device to automatically control level of molten material in an upstanding tubular mold open at upper and lower ends, said device having means regulating supply of molten material to the upper end of the mold and extraction of molded product from the lower end of the mold, which method comprises scanning with said radiation-responsive device a selected generally vertically extending and laterally restricted field comprehending only a limited fraction of molten-material surface and adjacent mold-wall surface, such scan being from a fixed location external to and offset from the mold, the scan including a generally vertical recurrent sweep of radiation selected in a spectral-response region for which the molten material and adjacent mold-wall surface produce contrasting levels of electrical signal in said device, whereby an electrical-signal change will occur for each sweep at a time in the sweep reflecting instantaneous level of molten material, utilizing said

signal change to generate an electrical control signal indicative of the time in the sweep at which signal change occurs,



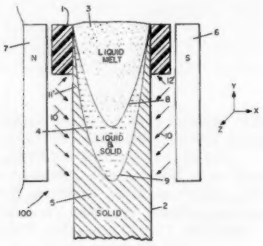
and utilizing said control signal and therefore the observed time in the sweep to impart a corrective adjustment of said regulating means.

3,842,895

METAL ALLOY CASTING PROCESS TO REDUCE MICROSEGREGATION AND MACROSEGREGATION IN CASTING

Robert Mehrabian, Cambridge, and Merton C. Flemings, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 10, 1972, Ser. No. 216,818
Int. Cl. B22d *11/02, 27/02*
U.S. Cl. 164—49 **3 Claims**



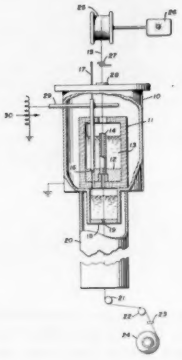
1. A method of reducing segregation in metal alloy castings in a continuous-casting process, that comprises, introducing a molten liquid metal of said alloy into a mold, withdrawing heat from one region of the liquid metal in the mold to effect solidification thereof, simultaneously adding heat in a controlled manner to the liquid metal, and internally controlling flow of said heat through the liquid metal to retard the velocity of the liquidus isotherm while maintaining substantially the velocity of the solidus isotherm, thereby reducing the width of liquid-solid mushy zone that exists between the liquidus and solidus isotherms and hence reducing both short range and long range segregation, the liquid metal being heated by superheating the molten metal prior to introduction to the mold to provide the necessary added heat and said flow of the heat being controlled by retarding convection of the liquid metal within the mold.

3,842,896

METHOD FOR PRODUCING COMPOSITE METAL WIRE

Emerick J. Dobo, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed June 4, 1973, Ser. No. 366,920
Int. Cl. B22d *11/12*
U.S. Cl. 164—86 **6 Claims**



1. A method for producing aluminum-clad steel composite wire comprising the steps of:
   a. forming a clad of molten aluminum about a preheated strand of steel wire by moving the steel wire directly through the center of a melt extrusion orifice while simultaneously extruding molten aluminum through said orifice, said steel wire having been preheated to a temperature proximate to that of the molten aluminum before contact therewith;
   b. causing a protective film to form about said molten aluminum clad by contacting same with a reactive gaseous atmosphere immediately upon exit from said melt extrusion orifice; and
   c. cooling the molten aluminum-clad steel wire to effect a solidification of the aluminum cladding.

3,842,897

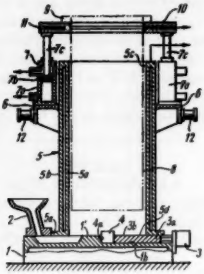
APPARATUS FOR ELECTROSLAG REMELTING OF METALS AND ALLOYS

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14, and Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3, all of Kiev, U.S.S.R.

Continuation of Ser. No. 42,911, June 3, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,888
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **4 Claims**

1. An apparatus for the electroslag remelting of metals and alloys comprising in combination: a cooled mold for casting an ingot therein, said mold having side walls, an upper end and an open bottom end, a pan on which the open bottom end of the cooled mold is mounted, a means for bottom gate pouring of slag into the mold, a mechanism for feeding consumable electrodes into the mold via the upper end thereof, and means mounting the feeding mechanism directly on the side walls of the mold, said pan being provided with a recess, and a dummy bar positioned in the recess, and further comprising a means

for transversely clamping the dummy bar in the pan, said clamping means including a slide movable horizontally in the



recess in the pan and said slide having an upper surface flush with the upper surface of the pan.

3,842,898

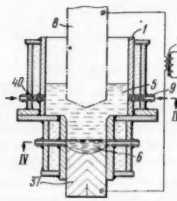
APPARATUS FOR ELECTROSLAG REMELTING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 5, kv. 21; Boris Izrailevich Theddvar, bulvar Lesi Ukrainki, 2, kv. 6; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Leonty Vasilievich Chekotilo, ulitsa Scherbakovke,49a, kv. 10; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Vasily Ivandvich Us, ulitsa Saxaganskogo, 58, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 65, kv. 102; Viktor Leonidovich Artamonov, ulitsa Sovskaya, 9, kv. 4; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Georgy Alexandrovich Boiko, ulitsa Vl.Libedskaya, 16, kv. 106; Anatoly Konstantinovich Tsikulenko, ulitsa Babushkine, 23, kv. 38; Vasily Vladimirovich Ivon, Darnitskoe shosse, 107/2, kv. 16, and Leonid Viktorovich Pavlov, Borschagovskaya ulitsa, 234, kv. 6, all of Kiev, U.S.S.R.

Division of Ser. No. 125,744, March 18, 1971, Pat. No. 3,776,294. This application Mar. 8, 1973, Ser. No. 339,070

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **4 Claims**



1. A mould for electroslag remelting of consumable electrodes employing agents fed to the melt therein for improving the quality of formed ingots and comprising: at least one nozzle at least at one first level in the slag portion of the melt and at least one nozzle at least at one second level in the metal portion of the melt, which nozzles at said first level and said second level are used for injection of the agents which improve the quality of the ingot, into said melt and are made in the form of pipe branches mounted into the side wall of said mould, the longitudinal axis of said pipe branches being directed tangentially to the wall of said mould.

3,842,899

APPARATUS FOR CARRYING OUT FULL-FORM CASTING PROCESS

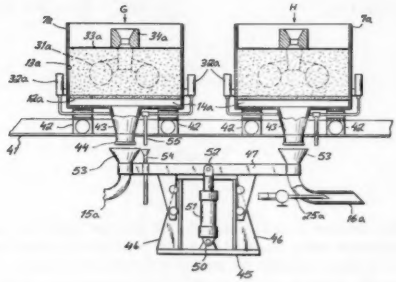
Hans-Ulrich Hauser-Lienhard, Watt, Switzerland, assignor to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen am Rhein, Germany

Division of Ser. No. 133,538, April 13, 1971, Pat. No. 3,741,281. This application Nov. 28, 1972, Ser. No. 310,096

Claims priority, application Switzerland, Apr. 20, 1970, 5869/70

Int. Cl. B22d *27/16*

U.S. Cl. 164—253 **5 Claims**



1. A casting apparatus, comprising:

a plurality of mold flasks, each provided with at least one gas-permeable wall separating a casting chamber from a plenum chamber;

a horizontal endless conveyor band for intermittently advancing said mold flasks along a closed transport path; and

means selectively communicating with said plenum chambers of said flasks at selected stations of advance of said flasks along said path for pressurizing said flasks to fluidize a mold-forming medium therein and for subjecting said flasks to suction to compact said medium about a platen, said means selectively communicating with said plenum chamber being so constructed and arranged as to alternately subject each of said flasks to pressurization and suction as said flasks are advanced along said path, said plenum chambers being provided with gas fittings, said means selectively communicating with said plenum chambers including mating fittings adjacent said path and engageable with the fittings of plenum chambers of flasks registering therewith, said mating fittings being mounted upon a support member; and

means for shifting said support member transversely to said path.

3,842,900

DEVICE FOR AUTOMATICALLY CASTING OF MOLTEN MATERIAL

Alois Noisser, Bergfeld, and Gerhard Nowak, Wien, both of Austria, assignors to Gravicast Patentverwertungsgesellschaft m.b.H.

Filed Apr. 4, 1973, Ser. No. 347,829

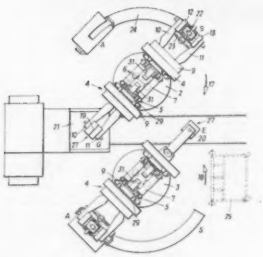
Claims priority, application Austria, Apr. 7, 1972, 3039/72

Int. Cl. B22d *5/02*

U.S. Cl. 164—326 **5 Claims**

1. A device for automatically casting molten material, comprising a pouring station having a pouring nozzle, carrier means for at least two molds having ingates successively movable into said pouring station, common for all carrier means, at least one further station for discharging and preparing each mold for the following casting operation, said carrier means comprising two carrier members for said molds stepwisely

guided between said pouring and further stations along two circular pathes of travel, each of said carrier members being rotatable around a vertical pivotal axis and comprising at least two cantilever arms relatively dephased for equal angles and radially extending from said axis for carrying the mold, the radius of the enveloping line of the circular pathes of the molds and the cantilever arms being smaller than the distance between said two axes, each carrier member being arranged



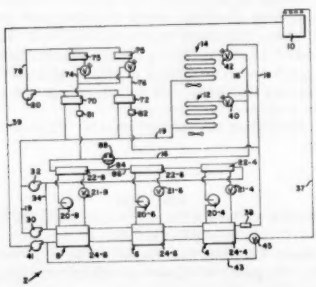
for rotation in only one sense of rotation, said two carrier members being arranged for timed rotation in opposed senses of rotation, wherein the pathes of travel of the ingates of said molds intersect one another at two intersecting points, said pouring station being arranged at the area of one of said intersecting points, whereas said further operating station is arranged at the area of the other of said intersecting points, said cantilever arms alternately passing said both intersecting points.

3,842,901

AIR CONDITIONING SYSTEM AND METHOD

Alden I. McFarlan, 691 Dorian Rd., Westfield, N.J. 07090

Division of Ser. No. 50,874, June 29, 1970, Pat. No. 3,670,806.
This application June 20, 1972, Ser. No. 264,544
Int. Cl. F24t *3/00*
U.S. Cl. 165—2 **2 Claims**



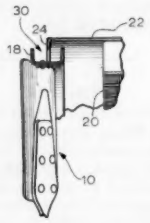
1. The method for maintaining comfort conditions within a plurality of zones or spaces wherein one or more of the zones or spaces requires cooling when another requires heating, the steps of, producing separate streams of chilled liquid and heated liquid by staged heating and cooling steps with refrigeration units having the flow path therethrough for the heated liquid by which the heat is discharged from the refrigeration units in series relationship opposite to the series relationship of the flow path therethrough for the chilled liquid, supplying said streams of chilled liquid and heated liquid as is required to handle the respective heating and cooling loads in the various zones or spaces and returning the liquid to the refrigeration units as return liquid, whereby heat is removed from one of said zones or spaces and is delivered by the return liquid to the refrigeration units and through said refrigeration units to the stream of heated liquid and is utilized to heat an exterior zone or space, discharging heat from the system when there is an excess, and controlling the discharge of heat from the system to maintain the stream of heated liquid at a temperature within the range of 90°F to 135°F when one of said zones or spaces requires heating with a progressively increasing temperature within said range as the heating load increases.

3,842,902

LABYRINTHIAN FAN

Warren P. Poslusny, Jackson, Mich., assignor to Hayes-Albion Corporation, Jackson, Mich.

Filed July 5, 1973, Ser. No. 376,692
Int. Cl. F28f *13/06*
U.S. Cl. 165—51 **5 Claims**



1. In an automotive cooling system the combination comprising:

a heat exchanger and an automotive engine mounted for both axial and radial movement with respect to each other;

a fan rotatably mounted to said engine and having a plurality of blades and including sealing means for creating a labyrinth seal; and

a shroud mounted to said heat exchanger and encircling said fan, said shroud having means for coacting with said sealing means on said fan to form a labyrinth seal in the gap between said shroud and said fan;

said means on said fan and said shroud which form said labyrinth seal being disposed such that relative axial and radial movement therebetween does not interfere with the rotation of said fan.

3,842,903

NOVEL HEATING, VENTILATING AND AIR-CONDITIONING SYSTEM

Rafael Rubinstein, 2 Coventry Ct., Englishtown, N.J. 07726

Filed Feb. 1, 1973, Ser. No. 328,662
Int. Cl. F24h *3/116*
U.S. Cl. 165—122 **6 Claims**

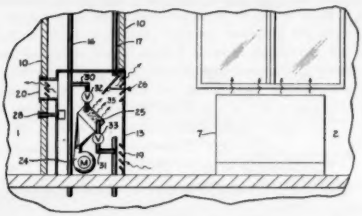
1. In a structure having at least one unit characterized by a common access point and a plurality of rooms defined by interior walls, a system for comfort-conditioning the air in said unit comprising

a. in a central room of said unit means for cooling, filtering and ventilating the air in said unit while venting exhaust air to the atmosphere through an exterior wall of said unit and

b. located adjacent a first opening in at least one wall between said central room and a second room of said unit not having air-cooling means, a casing with associated damper means housing a combination of forced air-transfer means and a heat exchanger;

whereby cooler air can be drawn by said forced air-transfer

means from said central room through said first opening, casing, and heat exchanger and passed in into said second room, and an equivalent amount of air can pass from said second room to said central room through a second opening



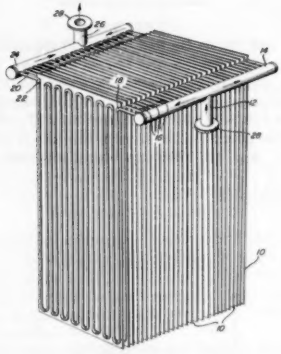
in a wall between said second room and said central room or an area communicating therewith, and said damper means can direct part of said air drawn into said first opening and heat exchanger back into said central room; said heat exchanger being operatively connectable to a heat energy source.

3,842,904

HEAT EXCHANGER

Hugh E. Gardenier, Tullahoma, Tenn., assignor to Aronetics, Inc., Tullahoma, Tenn.

Filed June 15, 1972, Ser. No. 263,201
Int. Cl. F28f *7/0*
U.S. Cl. 165—145 **15 Claims**



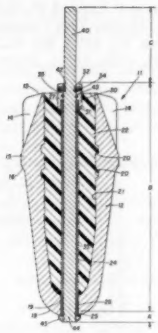
1. A heat exchanger module for transferring heat from a hot solid particle-containing gas to a secondary liquid, the heat exchanger module comprising: a plurality of vertically oriented substantially parallel flat rectangular plates, each plate having first and second substantially flat surfaces, a passage for the flow of said secondary liquid between said surfaces and a substantially smooth exterior to permit the unobstructed passage of said solid particle-containing gas thereby, said passage comprising an array of at least one liquid-conducting tubular conduit having a diameter confined within the boundaries of said first and second surfaces and a length substantially in excess of the perimeter of its flat rectangular plate, lying in a pattern extending substantially through the entire area of its flat rectangular plate and having an inlet opening and an outlet opening; shell means surrounding said plurality of flat plates and forming a gas flow path having a gas inlet end and a gas outlet for the passage of said solid particle-containing gas, said gas flow path enabling said gas to intimately flow by said plurality of flat plates in a direction parallel thereto, and to transfer heat to said secondary liquid flowing through said tubular conduits; supply means to supply said secondary liquid to the inlet opening of each flat plate; withdrawal means to convey heated secondary liquid away from the exit opening of each flat plate; and gas supply means for supplying said hot solid particle-containing gas to the gas inlet end of said gas flow path.

3,842,905

OIL WELL CEMENTING PLUG

O. L. Morrisett, and Gail M. Boehm, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 23, 1971, Ser. No. 136,928
Int. Cl. E21b *33/16, 33/126*
U.S. Cl. 166—155 **26 Claims**



1. An oil well cementing plug, which comprises:

a. an elongated housing having a fluid pressure relief passageway therethrough;

b. a rod slidably and sealingly positioned in said passageway;

c. frangible retaining means between said rod and said housing and arranged to maintain said rod in a sealing relationship with said housing until said frangible retaining means are sheared; and

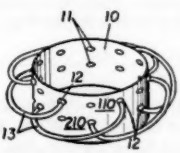
d. said rod adapted to move out of sealing contact with said housing upon shearing of said frangible retaining means.

3,842,906

WELL BORE CLEANER CONSTRUCTION

Edwin L. Paramore, and Tom W. Howe, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 31, 1972, Ser. No. 302,434
Int. Cl. E21b *37/02*
U.S. Cl. 166—172 **11 Claims**



1. Apparatus for cleaning well bores of drilling mud filter-cake buildup comprising:

a cylindrical sleeve of generally larger inner diameter than the outer diameter of casing in the well bore;

said cylindrical sleeve having a plurality of apertures through the wall thereof around the periphery of said sleeve;

a plurality of braided cables;
each end of said braided cable having a bell-ended socket assembly swaged thereto, and each said bell-ended socket assembly having an initially cylindrically extending portion extending into one of said apertures in said sleeve and bradded over on the inside of said sleeve, thereby permanently attaching said cables to said sleeve;
each said cable being of sufficiently greater length than the distance between said apertures to which it is connected, thereby forming a stiff outwardly extending cable loop on the outer surface of said sleeve; and
means for securing said sleeve fixedly to a section of well casing.

3,842,907

ACOUSTIC METHODS FOR FRACTURING SELECTED ZONES IN A WELL BORE

Billy Eugene Baker, and Edward M. Galle, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Feb. 14, 1973, Ser. No. 332,471
Int. Cl. E21b *43/25, 43/26, 43/27*
U.S. Cl. 166—249 **2 Claims**

1. An acoustical method for fracturing selected zones in a well bore comprising the steps of:
pumping a fluid down a well bore through a first conduit;
oscillating the pressure in said fluid within the well bore;
coupling the resulting fluid pressure oscillations with the bore hole wall at a selected depth;
isolating the fluid pressure oscillations to a selected zone to be fractured;
returning the fluid flow between the first conduit and a second conduit formed at least partially by the wall of the well bore;
increasing the density of the fluid to control the fluid pressure in the well bore to initiate fracture in the selected zone.

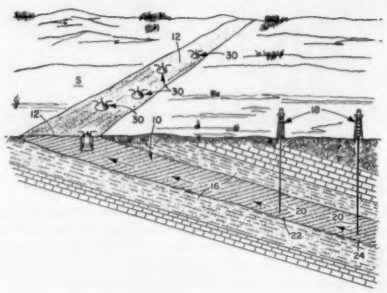
3,842,908

OPEN FLOW PRODUCTION SYSTEM AND METHOD FOR RECOVERY OF SHALLOW OIL RESERVOIRS

John P. Thomas, 2 Tudor City Ln., New York, N.Y. 10017, and Shih-Lin Chu, 16 Rustic Gate Ln., Dix Hills, N.Y. 11742

Filed Jan. 4, 1973, Ser. No. 320,863
Int. Cl. E21b *43/00, 43/20*
U.S. Cl. 166—268 **9 Claims**

1. A process of recovering flowable oil from a relatively shallow, porous oil-bearing formation which outcrops at or near the surface, comprising the steps of:
a. locating, excavating and installing an oil production system at the uppermost portion of the formation at the outcrop or near the surface thereof, said system communicating at its upper end with the surface and being entirely open at its bottom end in said formation;
b. injecting a fluid underpressure into the down structure position of said formation in a region thereof spaced from said production system, said fluid driving said oil upwardly through said formation to said production system,



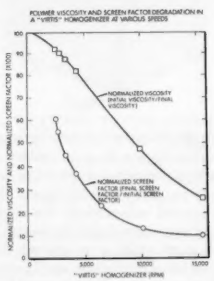
the latter by virtue of its size operating at essentially atmospheric pressure, the reduction of hydrostatic head and said open bottom providing in effect a large, open well bore thereby greatly increasing production capacity and reducing friction losses resulting from movement of the oil upwardly through the formation, and
c. removing the thus collected oil from said production system.

3,842,909

METHOD OF POLYMER FLOODING

John S. Rhudy, Littleton, and Gerald W. Haws, Denver, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 127,483, March 24, 1971, Pat. No. 3,726,342. This application Nov. 27, 1972, Ser. No. 309,824The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **15 Claims**


POLYMER VISCOSITY AND SCREEN FACTOR DEGRADATION IN A "VIRTIS" HOMOGENIZER AT VARIOUS SPEEDS
NORMALIZED VISCOSITY AND NORMALIZED SCREEN FACTOR (%)
NORMALIZED VISCOSITY (INITIAL VISCOSITY/FINAL VISCOSITY)
NORMALIZED SCREEN FACTOR (FINAL SCREEN FACTOR/INITIAL SCREEN FACTOR)
"VIRTIS" HOMOGENIZER (RPM)

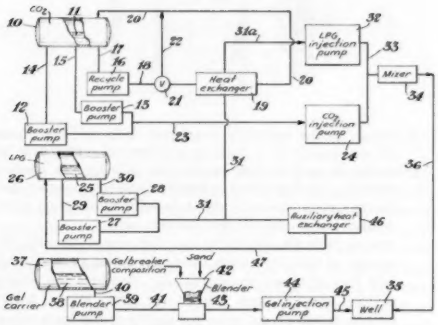
1. In a process for recovering crude oil from a subterranean oil-bearing reservoir having at least one injection means in fluid communication with at least one production means and wherein an aqueous solution of a high molecular weight copolymer of an ethylenically unsaturated carboxylic acid or salt thereof and an ethylenically unsaturated non-carboxylic compound is injected into the formation to displace crude oil toward the at least one production means and wherein the copolymer has a predetermined average molecular weight with at least 5 percent by weight of the copolymer having an

average molecular weight at least about 1.2 times greater than the average molecular weight of the total copolymer within the aqueous solution and wherein the at least 5 percent portion contributes significantly to reducing the permeability of the subterranean oil-bearing formation, the improvement comprising subjecting the copolymer solution to sufficient shear force to substantially shear all of the at least 5 percent portion of the copolymer, thereby reducing the average molecular weight of the at least 5 percent portion of the copolymer and thereafter injecting the copolymer into the reservoir and displacing it toward the production means, the overall effect being to inhibit the tendency of the copolymer to substantially reduce the permeability of the reservoir.

3,842,910
WELL FRACTURING METHOD USING LIQUEFIED GAS AS FRACTURING FLUID

Warren M. Zingg, and Delbert D. Grassman, both of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 4, 1973, Ser. No. 403,365
Int. Cl. E21b *43/25, 43/26*
U.S. Cl. 166—305 R **4 Claims**



1. A method for treating a subsurface earth formation penetrated by a wellbore, which comprises the steps of:

providing at the wellbore site a container of liquid carbon dioxide, the said carbon dioxide being stored in the container at a temperature and pressure at which the liquid phase will not boil;

providing at the wellbore site a container of liquid petroleum gas, the said petroleum gas being stored in the container at a temperature and pressure at which the liquid phase will not boil;

pumping a first portion of the liquid carbon dioxide from the container through a heat exchanger means at a given rate;

pumping the liquid petroleum gas through the heat exchanger means, and into a mixer means at a given rate;

transferring heat within the heat exchanger means from the liquid petroleum gas to the said first portion of liquid carbon dioxide, to thereby heat the said liquid carbon dioxide to a temperature at which the liquid phase will vaporize;

passing the carbon dioxide vapors from the heat exchanger back into the carbon dioxide container, to thereby maintain sufficient pressure on the liquid phase carbon dioxide to prevent the liquid from boiling at the rate at which the liquid is pumped from the container;

pumping a second portion of the liquid phase carbon dioxide from the container through the mixer means at a given rate;

mixing the liquid carbon dioxide and liquid petroleum gas in the mixer means;

pumping the liquid mixture of carbon dioxide and petroleum gas into the wellbore at a given rate; and

simultaneously pumping into the wellbore at a given rate a carrier composition which comprises a fluid composition containing a solid propping material.

3,842,911
METHOD OF FRACTURE ACIDIZING A WELL FORMATION

John A. Knox, and Sherman E. Fredrickson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 137,625, April 26, 1971, Pat. No. 3,768,564. This application Apr. 9, 1973, Ser. No. 349,909
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 166—307 **3 Claims**

1. A method for creating high capacity flow channels in a subterranean formation which consists essentially of the steps of:

a. inducing fractures in said formation;

b. introducing propping agents selected from the group consisting of sand, glass beads, walnut hulls, and mixtures thereof into said fractures while maintaining said fractures in an open position;

c. allowing said fractures to completely close on said propping agents; and thereafter

d. flowing acid into said fractures under conditions whereby said fractures remain closed on said propping agents to thereby form said high capacity flow channels in said formation.

3,842,912
METHOD AND APPARATUS FOR DEEP GAS WELL COMPLETIONS

Hiram E. Lindsey, Jr., c/o MWL Tool & Supply Co., P.O. Drawer 631, Midland, Tex.

Filed Sept. 4, 1973, Ser. No. 394,148
Int. Cl. E21b *43/27, 33/10, 33/134*
U.S. Cl. 166—307 **9 Claims**

1. A method for treating at least two spaced-apart strata in a well bore traversing earth formations where said strata are opened to the interior of a tubular assembly and the assembly has upper and lower packer bores disposed to straddle the upper strata,

closing off said upper and lower packer bores with substantially equal, effective cross-sectional upper and lower areas while providing with a first string of tubing a flow conduit through said packer bores where the flow conduit extends from the earth's surface to the lower strata,

connecting a second tubing string through the closed upper packer bore to the volume defined between the upper and lower areas, and

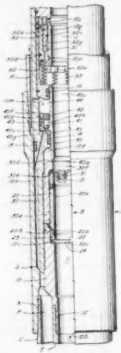
applying weight on the first string of tubing while introducing a fluid to the upper strata through the second string of tubing.

3,842,913

METHOD AND APPARATUS FOR A SUBSURFACE SAFETY VALVE OPERATING WITH DIFFERENTIAL ANNULAR PRESSURE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed May 14, 1973, Ser. No. 359,758
Int. Cl. E21b *43/12*
U.S. Cl. 166—314 **19 Claims**



1. A subsurface safety valve apparatus for connecting in a production tubing positioned in a well casing and sealed to the well casing by a packer for directing the flows of fluids produced by a well through a flow passage of the production tubing including:

a flow housing having a bore therethrough adapted for connection in the production tubing to form a portion thereof with said bore in communication with a flow passage of the production tubing for enabling flow of fluid through said bore;

bore closure means disposed in said bore for movement to and from an open position for enabling flow of fluid through said bore and to and from a closed position blocking flow of fluid through said bore;

means with said flow housing for effecting a fluid seal between said flow housing and the well casing to divide the annular area between the production tubing and the well casing above the packer into a lower reservoir below the fluid seal and an upper reservoir above the fluid seal; and means with said flow housing for effecting movement of said bore closure means to and from the open and closed position in response to the fluid pressure differential between said upper reservoir and said lower reservoir wherein the safety valve is operated.

3,842,914

SAFETY JOINT METHOD AND APPARATUS

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

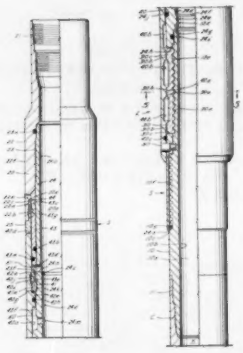
Filed May 14, 1973, Ser. No. 359,753
Int. Cl. E21b *43/00*; E21c *15/00*
U.S. Cl. 166—315 **12 Claims**

1. A safety joint for well conduits, including:

a. a first tubular member having a bore therethrough adapted for connection at a first end to a well conduit and having a surface with a locking recess formed therein;

b. a second tubular member having a bore therethrough adapted for connection at a first end to another section of the well conduit with said bores of said first tubular member and said second tubular member communicating therebetween;

c. lug means mounted with said second tubular member for movement relative to said second tubular member to an engaging position within said locking recess for connecting said first and said second tubular members and to a free position spaced from said locking recess enabling separation of said first and said second tubular member;



d. piston means operably connected with said lug means for movement to a locking position to retain said lug means in said locking recess and to a release position enabling said lug means to move to said free position, said piston means moving to the release position when a predetermined pressure urges thereon; and

e. means operably engaging said lug means for effecting release of said lug means from said locking recess when said first and said second tubular members are rotated relative to each other wherein the safety joint is releasable by relative rotation or the urging of a predetermined fluid pressure.

3,842,915

BEAN HARVESTING MACHINE AND METHOD

Albert Henry, Sr., 1311 Faith Dr., Salina, Kans. 67401

Filed July 13, 1973, Ser. No. 378,928
Int. Cl. A01d *29/00*
U.S. Cl. 171—1 **16 Claims**

1. A harvester for row plants comprising:

a pickup provided with plant-gathering mechanism and adapted for advancement across a field having plants to be harvested thereon; and

a series of laterally spaced-apart shovels on said pickup for the plant rows traversed by the pickup,

said shovels having digging heads spaced forwardly from said mechanism in leading relationship thereto to define a space between the mechanism and the heads,

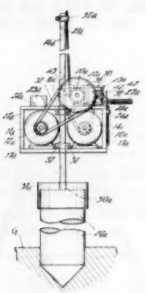
said heads being normally disposed lower than said mechanism for subsurface advancement beneath and along the plant rows aligned therewith for successively uprooting the plants into said space and onto the ground, and said ground supported plants being removed therefrom by said trailing mechanism.

3,842,916

ELECTRIC MOTOR HAMMER

Hikoitsu Watanabe, No. 5-13, 1-chome, Ebara-cho, Tokyo, Japan

Filed Dec. 10, 1973, Ser. No. 423,098
Int. Cl. E21b *1/00*; E02d *7/00*
U.S. Cl. 173—53 **7 Claims**



1. An electric motor hammer comprising a support having at least one motor and hoist means fixedly mounted thereon in balanced positions and provided with vertically aligned holes; and an upright guide rod passing through said holes and having clamp means in a position adjacent the upper end to which one end of a length of wire rope to be wound on said hoist means is anchored and a striking cap at the lower end, said striking cap being adapted to receive the upper end of an object to be driven by said motor hammer, whereby when said motor is driven, the entire support is lifted along said guide rod to a predetermined position whereupon the motor is stopped and the support is released so as to allow the entire support to drop by its own weight to deliver a high striking impact to said object.

3,842,917

PUMPED EVACUATED TUBE WATER HAMMER PILE DRIVER

Serge S. Wisotsky, Sharon, Mass., assignor to Orb, Inc., Marion, Ohio

Continuation-in-part of Ser. No. 163,422, July 16, 1971, abandoned. This application June 30, 1972, Ser. No. 267,741
Int. Cl. E02d *7/02*
U.S. Cl. 173—90 **18 Claims**

1. Pile driving apparatus for use in an ambient fluid including water or air, comprising an evacuatable elongated chamber with rigid side walls and a rigid barrier at one end; pumping means connected with the chamber for evacuating the chamber of at least a portion of any water, gases and vapors present therein; means, including valve means connected with the chamber walls, for maintaining said chamber closed against the entry of ambient fluid at least during said evacuation and for suddenly releasing a substantially load-velocity-independent flow of water into the evacuated portion of the chamber with its principal component of energy and motion

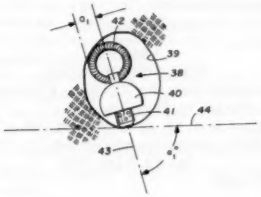
along the longitudinal axis of the chamber toward the barrier for impacting against same.

3,842,918

COILED SPRING WELL INSTRUMENT POSITIONER

Piero Wolk, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 18, 1973, Ser. No. 361,695
Int. Cl. E21b *49/04*
U.S. Cl. 175—4 **5 Claims**



1. An apparatus for performing a well operation in an earth borehole, comprising:

a body portion adapted to be transported through said borehole;

means for performing a well operation mounted in said body portion; and

a coiled spring affixed to said body portion, said coiled spring including a coiled spring body having a first end attached to said body portion and a second end portion attached to said body portion.

3,842,919

APPARATUS FOR VENTING GASES FROM AN ENCLOSED PERFORATING CARRIER

Raymond W. Dermott, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

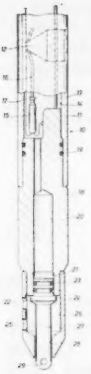
Filed Sept. 21, 1973, Ser. No. 399,657
Int. Cl. E21b *43/116*
U.S. Cl. 175—4.54 **15 Claims**

1. Perforating apparatus adapted for perforating earth formations traversed by a well bore containing pressured gases and comprising:

a carrier including a body member having an interior chamber for receiving at least one perforating device and at

least one opening therein providing access to said chamber, and a closure member in said access opening and sealingly coupled to said body member for blocking the entrance of well bore liquids into said chamber;

a venting passage arranged on at least one of said members for communicating said chamber with the exterior of said carrier; and



valve means normally blocking communication through said venting passage and cooperatively arranged for movement from a normal passage-closing position to a passage-opening position in response to a pressure in said chamber greater than the pressure exterior of said carrier for venting whatever pressured well bore gases may have entered said chamber.

3,842,920

PERCUSSION TOOLS

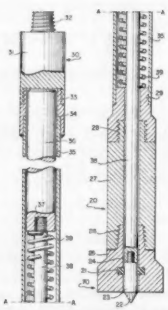
Eduardo Barnetche-Gonzalez, Culliacco 123, despachos 1307 and 1308, Mexico 11, D.F., Mexico

Filed Sept. 12, 1973, Ser. No. 396,610

Claims priority, application Mexico, Feb. 19, 1973, 141655

Int. Cl. E21b *1/06*

U.S. Cl. 175—299 **4 Claims**



1. A percussion tool suitable for drilling a geological formation, and comprising a means for hoisting said tool; a tool body; a bit means at the lower end of said body; means for rotating said bit attached thereto; a rupturing device carried by said tool at the lower end thereof; and an energy storing means, carried interiorly of said tool;

characterized in that said tool body is formed by a solid upper column, separatedly connected to a hollow intermediate column, within which said energy storing means is located;

a shaft means axially movable inside said hollow column;

said intermediate column being separatedly connected to a lower heavy body, connected in turn in a removable manner to said bit portion;

whereby all the components of said tool body are adapted to be changed in order to equate the weight and length of said tool to the specific needs of its application;

said shaft means being separatedly connected to said rupturing device to transfer thereto the energy stored in said energy storing device, as well as the strength imparted by said body when knocking on the upper end of said shaft.

3,842,921

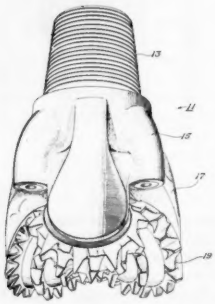
BORONIZED DRILL BIT CUTTERS

Herbert C. Dill, and Stanley R. Scales, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Aug. 10, 1973, Ser. No. 387,565

Int. Cl. E21b *13/00*

U.S. Cl. 175—374 **7 Claims**



1. In an earth boring drill bit, an improved rotatable cutter comprising:

a carburized case on the cutter exterior;

a boronized case on said carburized case;

said carburized case being heat treated such that the boronized case has a strong and tough supporting base that resists deformation.

3,842,922

VEHICLE WEIGH SCALE

Earle Reid Fagin, Mississauga, Ontario, and Charles Franklin Latter, Brampton, Ontario, both of Canada, assignors to Magnatech Ltd., Scarborough, Ontario, Canada

Filed Apr. 8, 1974, Ser. No. 458,515

Int. Cl. G01g *19/04, 19/02*

U.S. Cl. 177—1 **4 Claims**

1. A truck weigh scale comprising

a weigh platform for a truck;

a weigh scale for said weigh platform;

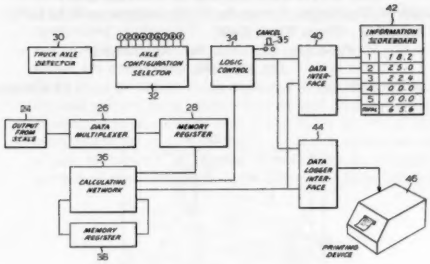
detector means for truck axles on said platform;

axle configuration selector means responsive to predetermined programming for arranging the axles of a truck in a series of predetermined axle configurations as its axles are detected by said detector means; and

weight register means responsive to said axle configuration selector means to register weight on said weigh scale,

said weight register means comprising a first memory register for weight on said weigh platform having an updating time base, a logic control, a calculating network, a data interface and an information recorder, said logic control being responsive to said axle configuration selector

means to operate said calculating network to accept the weight information in said first memory register upon the operation of said logic control, said time base being less than the time between entry of succeeding axle configurations in use, a second memory register adapted to accept and record the weight information transferred to said calculating network when said calculating network is



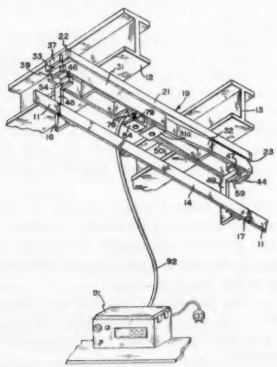
operated by said logic control for use by said calculating network at the next following time of operation of said logic control, said calculating network being adapted to calculate the difference between the weight information on said memory registers at the time of operation of said logic control and transmit it to said data interface for use by said information recorder.

3,842,923

OVERHEAD TRACK SCALE

Fred Lahira Moore, Petaluma, Calif., assignor to National Controls, Inc., Santa Rosa, Calif.

Filed Nov. 15, 1973, Ser. No. 416,187
Int. Cl. G01g *21/22, 23/26*
U.S. Cl. 177—163 **7 Claims**



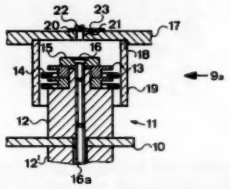
1. In a scale for weighing a load carried by an overhead track, a base adapted to be mounted on an overhead support such as the structure from which the track is suspended, a pair of axially aligned elongated levers extending in a direction generally parallel to the track, first generally planar vertically extending flexure plates connecting the remote ends of the levers to the base, second flexure plates spaced from and generally parallel to the first flexure plates, the upper portions of the second flexure plates being affixed to the remote ends of the levers, depending hanger brackets affixed to the lower portions of the second flexure plates, a rail carried by the hanger brackets adapted to replace a section of the overhead track when the scale is installed whereby a load can be moved freely between the rail and the remainder of the track, flexible means connecting the proximate ends of the levers together, an output transducer carried by the base for delivering an output signal corresponding to the force applied thereto, and means connecting the proximate end of one of the levers to the output transducer.

3,842,924

DAMPING ARRANGEMENT FOR A BALANCE

Albert Schmitter, Gruningen, and Ernst Strickler, Wolfhausen, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee-Zurich, Switzerland

Filed Jan. 2, 1973, Ser. No. 320,204
Claims priority, application Switzerland, Feb. 25, 1972, 2715/72
Int. Cl. G01g *21/17*
U.S. Cl. 177—184 **10 Claims**



1. A balance arrangement comprising, in combination:

a. a balance having a normally stationary support, a weighing pan movable relative to said support under an applied load, and indicating means for indicating the magnitude of the applied load;

b. a cylinder member having an axis and an inner, axially extending annular face;

c. a piston member received in said cylinder member for relative movement of said members having a predominant component in the direction of said axis while said piston member is spaced from said face transversely of said direction;

d. fastening means fastening one of said members to said support;

e. motion transmitting means connecting the other member to said weighing pan for simultaneous movement; and

f. a piston ring mounted on said piston member for free movement relative to said piston member transverse to said axis,

1. the outer circumference of said ring and said face being dimensioned to define therebetween an annular gap narrower than the spacing of said piston member from said face.

3,842,925

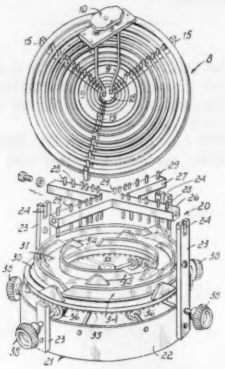
DEVICE FOR RAISING WEIGHTS IN PRECISION BALANCES

Carlo Crespi, Via Sordello 10, Milan, Italy

Filed Oct. 3, 1972, Ser. No. 294,736
Claims priority, application Italy, Oct. 5, 1971, 53269
Int. Cl. G01g *1/28, 1/26*
U.S. Cl. 177—248 **6 Claims**

1. A device for raising and lowering the weights in precision balances of the type having a balance beam, a support member suspended at one end of said balance beam, a plurality of annular weights supported by said support member concentrically to each other in a substantially horizontal plane, and manually operable control means for controlling the raising and lowering of said weights, the device comprising a base for

removable connection to said balance below said support member, guiding means provided over said base and extending below said weights substantially radially thereto, a plurality of pusher elements including pins slidable within said guiding means substantially perpendicularly to the plane of said weights for raising and lowering said weights, means for operating said pins including rotatable annular disc members arranged concentrically to each other in the same plane below



said guiding means and having an upper face provided with cam means for engaging said pins and a lower face provided with operating means for independent rotation of said disc members, said operating means being operatively connected to said manually operable control means of the balance, whereby operation of said control means causes rotation of said disc members and raising and lowering of said weights according to a program defined by said cam means.

3,842,926

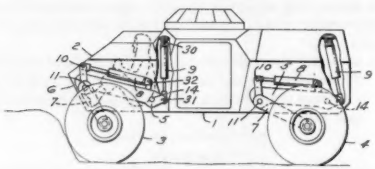
WALKING WHEELED VEHICLE

Joseph Williams, St. Clair Shores; Clifford D. Bradley, Madison Heights, and Howard C. Mottin, Warren, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 32,877, April 29, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,250

Int. Cl. B62d *57/02*

U.S. Cl. 180—8 R **4 Claims**



1. A vehicle comprising a hull; at least four wheels arranged on transverse axles for moving said hull in at least the forward direction; and a suspension means interposed between each wheel and the hull; each suspension means comprising a first powered member operable to raise and lower the associated section of the hull relative to the associated wheel, and a second powered member operable to reciprocate the axle of the associated wheel forwardly and rearwardly relative to the hull; said powered members being independently movable to provide various different combinations of hull elevations and wheel axle positions of reciprocation; each of said first powered members comprising a first crank arm pivotally connected to the hull, and each of the second powered members comprising a second crank arm pivotally connected to the first crank arm; the associated wheel having its axle journalled on the second crank arm so that the crank arms are interposed in series between the wheel and hull.

3,842,927

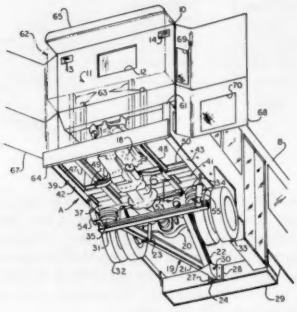
BUS WITH REPLACEABLE POWER UNIT

Keith W. Tantlinger, Coronado, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Jan. 22, 1973, Ser. No. 325,630

Int. Cl. B60k *5/10*

U.S. Cl. 180—11 **11 Claims**



1. In combination with a bus body having a downwardly open power unit compartment in the rear end thereof, structural side wall elements on opposite sides of the bus body defining the two sides of the compartment, and a structural bulkhead comprising the rear end wall of the bus body spaced forwardly from the design rear end of the bus body, and defining the forward end of, the compartment, a removable power unit comprising:

a power unit support frame fitted between the two sides of the compartment,

means releasably, structurally connecting the power unit support frame to the two sides of the compartment,

a rear drive wheel and axle assembly located forwardly of and below the level of the power unit support frame,

suspension means interposed between the power unit support frame and the wheel and axle assembly and resiliently supporting upon the wheel and axle assembly, the power unit support frame and the bus body to which it is connected,

a thrust and drag transmitting extension on the wheel and axle assembly extending forwardly therefrom,

hitch means pivotally, releasably connecting the forward extension of the wheel and axle assembly to a structural element of the bus body, and

a power package including a propulsion engine mounted on the power unit support frame, within the compartment, and in power driving relation with the drive wheel and axle assembly.

3,842,928

VEHICLE FOR A CHILD

Yoshihiro Kishi, Tokyo, Japan, assignor to Asahi Toy Company, Tokyo, Japan

Filed June 15, 1972, Ser. No. 263,284

Claims priority, application Japan, Aug. 21, 1971, 46-75144; Aug. 23, 1971, 46-76045

Int. Cl. B62d *61/08*

U.S. Cl. 180—26 R **5 Claims**

1. A vehicle for a child comprising:

a vehicle body having a seat at the rear part thereof;

right and left rear wheels and a front wheel for movably supporting said body, said front wheel being disposed on a line substantially lying on the longitudinal center of the vehicle;

a handle for turning said front wheel in selected directions;

a gear reduction mechanism connected with said front wheel;

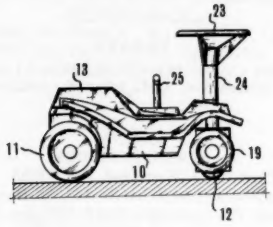
a motor for driving said gear reduction mechanism;

a battery power source; and

means for connecting said power source to said motor comprising a manually operated lever for performing switching operations between said power source and said motor for controlling the operation of said vehicle,

at least three terminals being arranged along a circular line on said vehicle body, with a first of said terminals being connected to one side of said motor and a second of said terminals being connected to the other side of said motor,

a pair of arcuate electrodes disposed on an extended portion of said lever so that said electrodes lie in substantially the same circular line as said terminals, with one of said electrodes being connected to one side of said battery and the other of said electrodes being connected to the other side of said battery and in all positions of operation of said lever being in contact with a first of said terminals, and



said terminals and said electrodes being arranged so that in a neutral position of said lever a second and third of said at least three terminals are not contacted by said electrodes, in a second position of said lever said one of said electrodes engages said second terminal while the other electrode engages said third terminal, and in a reverse position of said lever on the opposite side of said neutral position said one electrode engages said third terminal while said other electrode engages said second terminal, whereby said lever is operative to control the vehicle for respectively maintaining the same in a neutral driving condition, in a forward driving condition and in a reverse driving condition.

3,842,929

AUTOMATIC SEAT BELT APPLYING DEVICE

Akihiro Wada, Chiryu; Fumio Sugiura, Aichi, and Masaki Ooka, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Feb. 6, 1973, Ser. No. 330,082

Claims priority, application Japan, Feb. 8, 1972, 47-13759

Int. Cl. B60r *21/02*

U.S. Cl. 180—82 C **4 Claims**

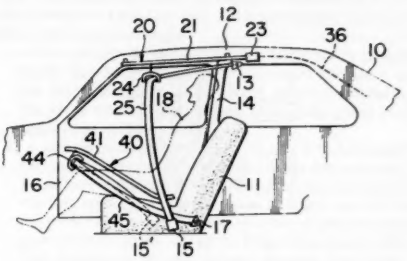
1. An automatic seat belt applying device for use in a vehicle, comprising:

a shoulder belt for confining the shoulder of an occupant;

a shoulder belt drive assembly comprising a first guide rail set in place along the roof side rail of a vehicle, a first wire having such rigidity as enables the first wire to be pushed and pulled and set in place in said first guide rail, a first driving gear set in place on said roof side rail and operatively connected with said first wire for reciprocating the first wire in said first guide rail, a first couple of limit switches arranged at both ends of said first guide rail, and a first slide member fixed on said first wire and loosely supporting said shoulder belt;

a lap belt for confining the occupant on the waist;

a lap belt drive assembly comprising a second guide rail set in place diagonally on the interior surface of a door facing the position for confining the occupant, a second wire having such rigidity as enables said second wire to be pushed and pulled and set in place in said second guide rail, a second driving gear set in place on said interior surface of the door and operatively connected with said second wire for reciprocating said second wire in said second guide rail, a second couple of limit switches ar-



ranged adjacent to the both ends of said second guide rail, and a second slide member fixed on said second wire and loosely supporting said lap belt;

said shoulder belt drive and lap belt drive assemblies being assembled respectively into one single entity; and an electric circuit for operating each of said first and second driving gears comprising a line having a door switch arranged on the grounding side of each one of said first and second limit switches, a line having each of said first and second limit switches connected in parallel to the power source line for said each driving gear, and a plurality of relays set in place for each and every one of said first and second limit switches.

3,842,930

COLLISION SENSOR

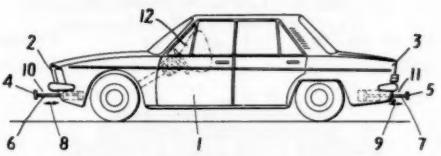
Ernst Fiala, Braunschweig-Querum, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 6, 1972, Ser. No. 241,788

Claims priority, application Germany, Apr. 24, 1971, 2120075

Int. Cl. B60r *21/00*

U.S. Cl. 180—91 **2 Claims**



1. An improved collision sensor for vehicles comprising a sensor located at the end of a rod adapted to extend the sensor beyond the bumper and main body of the vehicle for a distance dependent upon the speed at which the vehicle is traveling, said sensor being responsive to contact pressure for activating a safety mechanism that secures a passenger to his seat within the vehicle, and means for controlling the displacement

of the rod so as to extend the sensor beyond the bumper and body of the vehicle as a function of the vehicle's speed to permit early activation of the safety mechanism in the event of a collision.

3,842,931

VEHICLE VACUUM LINE PRIORITY VALVE

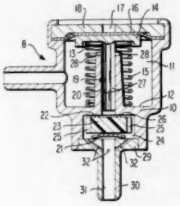
Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unlerturkheim, Germany

Filed Mar. 24, 1972, Ser. No. 237,843

Claims priority, application Germany, Mar. 25, 1971, 2114589

Int. Cl. B60t *15/18*

U.S. Cl. 180—103 **34 Claims**



1. A motor vehicle driven by an internal combustion engine having a suction pipe for producing a vacuum auxiliary force, the vehicle including at least two adjusting mechanisms of unequal rank for the maintenance of the operating safety which are actuated by the auxiliary force, comprising: a line interconnecting the at least two adjusting mechanisms, a control means provided in said line leading to the respective subordinate adjusting mechanism, said control means including a housing having an upper and lower space, and means for interrupting the auxiliary force when the characteristic magnitude of said force reaches a predetermined value still sufficient for the satisfactory operation of the next-higher ranking adjusting mechanism, said last-mentioned means including a diaphragm shifting means, said diaphragm shifting means including a diaphragm disposed in said upper space, a plunger connected with said diaphragm by way of a plate, a valve plate means disposed in said lower space selectively actuated by said plunger in dependence on prevailing vacuum force, said control means further including means provided in said plunger for communicating said upper space with said lower space.

3,842,932

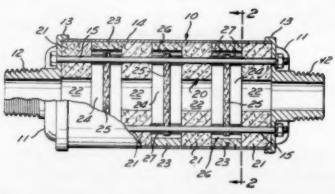
SOUND-TRAP MUFFLER

Stephen J. Gibel, 5846 Edgerton Rd., North Royalton, Ohio 44133

Filed Nov. 1, 1972, Ser. No. 302,758

Int. Cl. F01n *1/10, 1/24*

U.S. Cl. 181—50 **5 Claims**



1. A muffler for a low-volume exhaust comprising a casing having end closures therefor, each closure having an opening into the interior of said casing and at least one such opening permitting connection to an exhaust outlet, a plurality of adjacent axially concentric ring structures within said casing, said ring structures having alternate larger and smaller inner diameters, the axial thicknesses and inner diameters of said ring structures defining alternate large and small volume chambers, the cross-sectional areas of said chambers being aligned with said casing openings and the cross-sectional area of the smaller chambers being at least as large as the cross-sectional area of either of said casing openings to provide a bore through said muffler, and a partition located within each of the larger chambers and closing off said bore thereat and means to support said partitions so as to provide a passageway around each partition having a total cross-sectional area not less than the cross-sectional area of said bore but whereby the mean free path through said muffler is longer than the axial length of said bore through said chambers, said chambers having surface portions of substantially anechoic acoustic material whereby said chambers provide traps for sound waves therewithin.

ERRATA

For Classes 181—50 and 181—33 see:
Patents Nos. 3,842,940 and 3,842,942

3,842,933

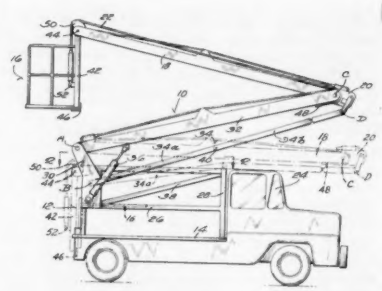
AERIAL PLATFORM

Albert L. Clark, Rt. 4, West Bend, Wis. 53095

Continuation-in-part of Ser. No. 147,396, May 27, 1971, abandoned. This application June 8, 1973, Ser. No. 368,436

Int. Cl. B66f *11/04*

U.S. Cl. 182—2 **6 Claims**



1. An aerial platform adapted to be mounted on the chassis of a vehicle, comprising

a. four bar linkage including:

i. a frame adapted to be fixed to the chassis;

ii. a driver link pivotally connected at its lower end to said frame;

iii. limited length means positioned below said driver link and pivotally connected at its lower end to said frame at a point spaced from said pivotal connection of said driving link to the frame;

iv. a floating link pivotally connected to the upper ends of said driver link and said limited length means so that, upon upward movement of said driver link and said limited length means, a forward portion of said floating link pivots downwardly in respect to its connection to said driver link;

b. said floating link having an extended lever section, which extends beyond the connection between said floating link and said driver link and, which pivots upwardly in respect to said driver link as the driver link and said limited length means are moved upwardly;

c. platform means connected to said extending lever section;

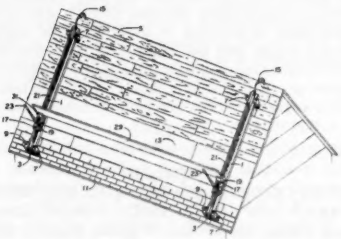
d. hydraulic cylinder means connected between said frame and said driver link and adapted to move said linkage between a collapsed position in which said platform means is at its lower most position and an expanded position in which said platform means is moved above said upper ends of said driver link and said limited length means and wherein said platform means is pivotally connected to said lever section, and including means for maintaining said platform section generally horizontal during movement of said linkage, said means including an elongated member with flexible portions having one end connected to said platform, said elongated member extending along said floating link, and the other end of said elongated member being wrapped around the end of said driver link and connected to said driver link.

3,842,934

APPARATUS FOR LAYING ROOFING MATERIALS ON A SLOPING ROOF

Billy G. Bartlett, 310 Maple St., Big Stone Gap, Va. 24219

Filed Apr. 19, 1973, Ser. No. 352,456
Int. Cl. E04g *3/12, 5/04*
U.S. Cl. 182—37 **1 Claim**



1. Apparatus comprising

A. a first elongated load supporting member,

B. a plurality of slidable support means adapted to support the first elongated load supporting member in spaced-apart relationship to a sloping roof, the slidable support means being adapted to be slid along the first elongated load supporting member and locked in a desired location,

C. a first hook means hingably attached to an end of the first elongated load supporting member, the first hook means being adapted to extend over the gable of the sloping roof and contact the opposite sloping roof so as to restrain the first elongated load supporting member from sliding down the sloping roof when placed thereon,

D. a first load supporting carriage riding on the first elongated load supporting member,

E. a means to incrementally advance the first load supporting carriage along the first elongated load supporting member,

F. a second elongated load supporting member, the second elongated load supporting member being located in the same plane as the first elongated load supporting member, spaced apart from the first elongated load supporting member and oriented parallel to the first elongated load supporting member,

G. a plurality of slidable support means adapted to support the second elongated load supporting member in spaced-apart relationship to the sloping roof, the slidable support means being adapted to be slid along the second elongated load supporting member and locked in a desired location,

H. a second hook means hingably attached to an end of the second elongated load supporting member, the second hook means being adapted to extend over the gable of the sloping roof and contact the opposite sloping roof so as to restrain the second elongated load supporting member from sliding down the sloping roof when placed thereon,

I. a second load supporting carriage riding on the second elongated load supporting member,

J. a means to incrementally advance the second load supporting carriage along the second elongated load supporting member,

K. a third elongated load supporting member having one portion of the member residing on one load supporting carriage and another portion of the load supporting member residing on the other load supporting carriage;

the cross-section of the first and second elongated load supported members comprising

1. a first rectangular section having a substantially greater width than height, the axis of the longer dimension of the first rectangular section being oriented parallel to the plane wherein the first and second elongated load supporting members reside, and

2. a second rectangular section having a substantially rectangular section being attached to the first rectangular section at the center of the longer dimension side of the first rectangular section so as to orient the axis of the longer dimension of the second rectangular section perpendicular to the axis of the longer dimension of the first rectangular section, thereby forming a tee cross-section;

the first and second load supporting carriages each comprising a member having therein a channel having a cross-section corresponding in size and shape to the second rectangular section so as to allow the carriage to be disposed over the second rectangular section and allow the second rectangular section to reside within the channel, the carriage further comprising a plurality of wheels adapted to allow the carriage to roll along the top of the first rectangular section;

the top of the second rectangular section of the cross-section being a rack; and

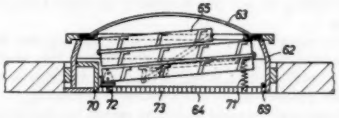
the means to advance the first and second carriages comprising in combination a jacking member and a restraining member, the jacking member being pivotally attached to the carriage and arranged so as to engage a tooth of the rack and advance the carriage when rotated from a rest position to a carriage advance position, the restraining member being arranged so as to engage a tooth of the rack and restrain the carriage in the advanced position.

3,842,935

COVERING AND STAIR ACCESS FOR OPENINGS IN CEILINGS, ROOFS AND SIMILAR WALL STRUCTURES

Wilhelm Frank, Leinfelden, Germany, assignor to Wilh. Frank GmbH, Leinfelden, Germany

Division of Ser. No. 127,311, March 23, 1971,. This application Jan. 16, 1973, Ser. No. 324,231
Int. Cl. E06c *9/06*
U.S. Cl. 182—81 **18 Claims**



1. A covering for openings in ceilings, roofs and similar structures, comprising a frame adapted to be fitted into the opening with its outer periphery sealed with the structure

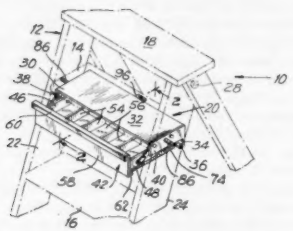
surrounding the opening and adapted to extend above and seal the top over the opening, and to extend at least flush with the lower part of the material surrounding the opening, a top cover panel closing the upper end of said frame and being pivoted to said frame adjacent one side thereof, and being movable to open and close the frame in order to ventilate and or to open the space through said frame, a foldable stairs having an upper end pivotally connected to said frame and being pivotal upwardly into said frame in a folded position for storage and downwardly to lower an opposite end of said stairs to the ground to define a stair passageway upwardly through said frame to the roof, a bottom panel connected to said frame closing the opening of said frame below said stairs, said panel having openings for the passage of air therethrough and means elastically connecting said panel to said stairs, said stairs holding said panel against said frame when said stairs are in a folded withdrawn position.

3,842,936

COMPARTMENTALIZED ACCESSORY TRAY ASSEMBLY FOR LADDERS

Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.

Filed May 10, 1971, Ser. No. 141,740
Int. Cl. E06c *5/32, 7/14*
U.S. Cl. 182—129 **27 Claims**



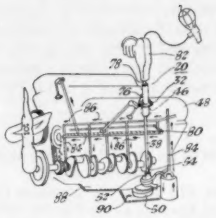
1. An accessory tray assembly comprising
a housing, and
a tray member,
said housing comprising
a top wall,
a rear wall, and
a pair of side walls depending downwardly from said top wall,
said tray member comprising
a bottom wall,
a front wall member,
a rear wall, and
a pair of side walls extending upwardly from said bottom wall,
means pivotally interconnecting the respective housing side walls and said tray member side walls to permit slidable movement of said tray member with respect to said housing,
means interconnected between said housing and said tray member to normally bias said accessory tray assembly in its closed position wherein said tray member is substantially positioned inwardly within said housing,
said front wall member including means for slidably moving said tray member substantially outwardly from said housing against the force exerted on said tray member by said biasing means, and
said tray member in the fully open and fully closed positions of said tray assembly being disposed in coplanar relationship.

3,842,937

CIRCULATION OF LUBRICANT OF AN INTERNAL COMBUSTION ENGINE PRIOR TO START-UP

Raymond R. Lippay, 702 E. 19th Ave., Munhall, Pa. 15120, and Walter A. Kolas, Lebanon Rd., West Mifflin, Pa. 15122

Filed Sept. 22, 1972, Ser. No. 291,280
Int. Cl. F01m *1/02*
U.S. Cl. 184—6.3 **14 Claims**



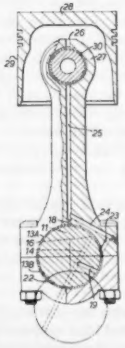
1. In an internal combustion engine having an internal lubricant pump coupled to said engine for operation thereby, the improvement comprising a lubricational tool insertable into said engine for operating said pump to lubricate said engine prior to engine start-up, said tool including a body member, a shaft rotatably extended through said body member, said shaft terminating in a slip-joint for engagement within said engine with said pump, said body member being shaped for extension of said shaft spacedly through an opening in a block of said engine, and means for rotating said shaft in operative engagement with said pump to lubricate said engine prior to said start-up.

3,842,938

PISTON COOLING AND/OR SMALL-END BEARING LUBRICATION ARRANGEMENT FOR I.C. ENGINES

Howard William Barnes-Moss, Brighton, England, assignor to Richardo & Co., Engineers (1927) Limited, Shoreham-by-Sea, Sussex, England

Filed Dec. 29, 1972, Ser. No. 319,478
Claims priority, application Great Britain, Dec. 30, 1971, 60852/71
Int. Cl. F01m *1/00;* **F16c** *1/24, 33/00*
U.S. Cl. 184—6.5 **5 Claims**



1. In an internal combustion engine of the piston type and including a piston reciprocable in a cylinder, a rotary crankshaft having an oil passage therein, a crank with a crankpin

formed as a part of the crankshaft, a connecting rod having a big end and a small end, a big-end bearing by which the big end of the connecting rod is journalled on the crankpin, the big-end bearing having upper and lower half-cylindrical bearing shells carried by the big end of the connecting rod, a small-end bearing by which the small end of the connecting rod is pivotally connected to the piston, a lubrication system comprising a pressurized oil supply for supplying pressurized oil to the oil passage in the crankshaft, a longitudinal oil supply passage formed lengthwise in the connecting rod and extending between its ends, a big-end oil feed passage formed in the crank and crankpin and communicating with the oil passage in the crankshaft, the big-end oil feed passage terminating in a big-end bearing lubrication hole located in the leading quadrant of the crankpin surface ahead of its top-dead-center point, an auxiliary oil supply passage formed in the crankpin and also communicating with the oil passage in the crankshaft, said auxiliary oil supply passage terminating in an auxiliary lubrication hole located in the crankpin surface in its half-side remote from the top-dead-center point of the crankpin, said big-end bearing having an internal part-circumferential groove formed therein, the greater part of the length of the groove formed in the big-end bearing being formed in the bearing surface of the lower bearing shell remote from the piston, the auxiliary lubrication hole being in alignment with the groove so as to open into the groove during a part of each complete cycle of rotation of the crankshaft, and the groove communicating with the end of the connecting rod longitudinal oil supply passage remote from the piston, the auxiliary lubrication hole and groove being offset to one side of the big-end bearing lubrication hole in the direction of the axis of the crankpin whereby communication between the groove and the big-end bearing lubrication hole is prevented throughout the cycle of rotation of the crankshaft.

3,842,939

GREASE BOX FOR DISPENSING LUBRICANT

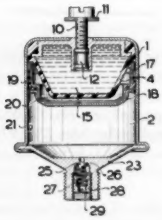
Roland Satzinger, Euerdorf, Germany, assignor to Gebhard Satzinger Metallwarenfabrik, Bad Kissingen, Germany

Filed Aug. 7, 1972, Ser. No. 278,315

Claims priority, application Germany, Aug. 9, 1971, 2139771

Int. Cl. F16n *5/00*; B67d *5/44*

U.S. Cl. 184—39 **6 Claims**



1. In a grease box comprising a casing having a closed expandable hollow body therein, said hollow body containing electrolytic fluid into which a galvanic element is advanceable to produce gas under pressure to effect expansion of said hollow body which, in turn, effects dispensation of a lubricant out of a chamber in said grease box, the improvement which comprises a slidingly displaceable insert within said casing comprising a gas tight lip seal, said lip seal disposed between a portion of said expandable hollow body and said casing, means to maintain said lip seal in sliding position within said casing, said insert engageable by the expandable wall of said hollow body and movable in response to forces of expansion on the walls of said hollow body.

3,842,940

SILENCER FOR INTERNAL COMBUSTION ENGINES

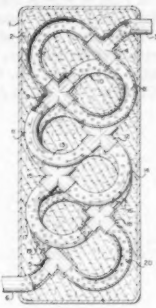
Leszek Boniłowski, Krakow, Poland, assignor to Wytwornia Silnikow Wysokopreznych Przedsie-biorstwo Panstwowe, Andrychow, Poland

Continuation of Ser. No. 28,470, Aug. 14, 1970, abandoned. This application Nov. 7, 1972, Ser. No. 304,429

Claims priority, application Poland, Apr. 17, 1969, 132996

Int. Cl. F01n *1/10*

U.S. Cl. 181—50 **2 Claims**



1. A silencer for an internal combustion engine comprising:

a plurality of sets of pipes, each set comprising two bowed symmetrical pipes each having an inlet and an outlet and being perforated along their lengths,

a connector for the pipe inlets of each set comprising a pair of oppositely extending arms to each of which an inlet of a said pipe is axially connected, and inlet arm means extending transversely of said oppositely extending arms, a connector for the pipe outlets of each set comprising a pair of oppositely extending arms to each of which an outlet of a said pipe is axially connected, and outlet arm means of said last mentioned connector extending transversely of said arms thereof,

the outlets of the pipes of one set being connected to the inlets of the pipes of a succeeding set by a said connector having two pairs of coplanar oppositely extending arms transverse to each other,

a housing for said pipes and connectors, and sound absorbing material occupying the space in said housing around said pipes and connectors.

3,842,941

SOUND-DAMPING INSTALLATION FOR RUNNING-UP AIRCRAFT

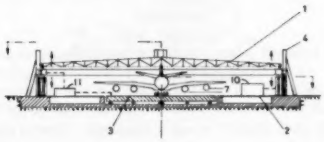
Oskar Gerber, Stuttgart-Degerloch, Germany, assignor to Oskar Gerber Schall-u. Schwingungstechnik GmbH, Stuttgart-Degerlock, Germany

Filed Apr. 17, 1972, Ser. No. 244,603

Claims priority, application Germany, Aug. 17, 1971, 2141689

Int. Cl. E04b *1/342*

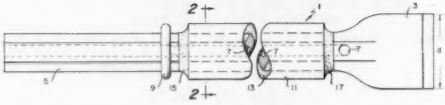
U.S. Cl. 181—33 HB **2 Claims**



1. A structure for housing an aircraft during engine run-up and being particularly adapted to abate the noise resulting from such run-up comprising,

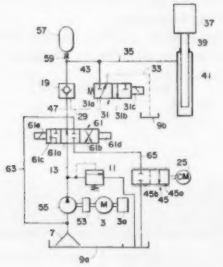
a rotatable floor element on which the aircraft may be positioned,
a roof element rotatable with said floor element,
and a plurality of screen elements extending vertically between said floor element and said roof element,
at least some of said screen elements being rotatable about a vertical axis.

3,842,942
CONSTRAINED LAYER DAMPER AND NOISE SUPPRESSOR FOR A ROCK DRILL STEEL
James W. Jensen, Rolla, and Aarne Visnapuu, Vida, both of Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Oct. 1, 1973, Ser. No. 402,560
Int. Cl. F16f 7/00; E21c 13/00
U.S. Cl. 181—33 A **5 Claims**



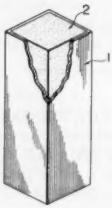
1. A combined constrained layer damper and noise suppressor for a rock drill steel shaft comprising:
an elongated drill steel shaft;
a drill bit rigidly fixed at the front end of said shaft;
a viscoelastic layer damping medium bonded around said steel shaft rearward of the drill bit and extending substantially along its entire length; and
a smooth, rigid constraint tube bonded to the outer surface of said medium and coextensive therewith along substantially its entire length, said tube having a wall thickness much less than said medium and less than one tenth its outer diameter.

3,842,943
HYDRAULIC ELEVATOR
Ichiro Nakamura, Katsuta; Fumio Fujisawa, Mito; Mitsuaki Takenoshita, and Hiroshi Yumino, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 15, 1973, Ser. No. 341,372
Claims priority, application Japan, Mar. 15, 1972, 47-25700
Int. Cl. B66b 1/24
U.S. Cl. 187—28 **20 Claims**



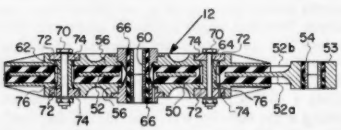
1. A hydraulic elevator comprising: a load support for allowing persons or objects to be carried thereby; expansible chamber means being drivingly connected to said load support for moving said load support upwardly during expansion and downwardly during discharge; variable capacity pump means for supplying fluid under pressure into said expansible chamber during upward movement of the elevator through means for conducting said fluid from said pump means; means drivingly connected to said pump means for controlling the flow rate of fluid pumped through controlling the capacity of said pump means to control the speed of ascent of the elevator; throttle means for throttling the flow of fluid from said expansible chamber; means for discharging fluid from said expansible chamber, said discharging means including means for controlling the speed of descent of the elevator through controlling the flow of fluid discharged from said expansible chamber, which means for controlling the speed of descent comprises said pump means, said means for controlling the flow of fluid and said throttle means.

3,842,944
SHOCK ABSORBER FOR AUTOMOBILES
Shigeo Shiotani; Harumi Magusa, and Tadaaki Oiwa, all of Nagoya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed June 8, 1973, Ser. No. 368,339
Claims priority, application Japan, June 9, 1972, 47-58055
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C **2 Claims**



1. A shock absorber for automobiles which comprises a steel hollow structure which is filled with a foamed product of aluminum or its alloys.

3,842,945
VISCOELASTIC DAMPER
James L. Potter, 108 Sherwood Dr., Edinboro, Pa. 16412
Division of Ser. No. 142,953, May 13, 1971, , which is a continuation-in-part of Ser. No. 84,003, Oct. 26, 1970, abandoned. This application June 28, 1973, Ser. No. 374,591
Int. Cl. F16f 7/08
U.S. Cl. 188—1 B **5 Claims**



1. A viscoelastic damper comprising an elongate body of viscoelastic material, an elongate nonextensible inner plate

embedded centrally within and bonded to said body and extending longitudinally thereof substantially the entire length thereof, said inner plate having one end extending outwardly beyond said body, pivotal connection means carried by said one end of said inner plate, separate elongate nonextensible outer plates bonded to opposite sides of said body substantially the entire length thereof in spaced apart parallel relation to each other and to said inner plate, the elongate axis of said plates being oriented in the same direction as that of said body, means rigidly interconnecting said outer plates for simultaneous movement relative to said inner plate and preloading said body between said inner and outer plates in compression perpendicular to its longitudinal axis, said outer plate interconnecting means being spaced from said body and inner plate means, and pivotal connection means carried by said outer plates, the axis of each of said pivotal connection means being perpendicular to the longitudinal axis of said damper.

3,842,946

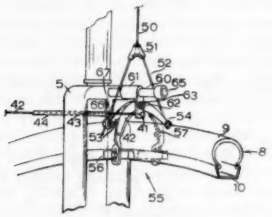
BRAKING SYSTEM

Bertram G. Blevens, 3206 5 Oaks Pl., Louisville, Ky. 40205

Filed Mar. 22, 1973, Ser. No. 343,890

Int. Cl. B62i 1/00; B60t 7/12

U.S. Cl. 188—24 **2 Claims**



1. For use with a bicycle, including a frame and wheel forks, wheels rotatably mounted in said wheel forks and means for imparting rotation to said wheels for propelling the bicycle, the combination therewith of an improved braking system, which comprises:

A. brakes mounted near the periphery of each of said wheels for application of braking effort to the peripheral portion of each of said wheels:

B. means for applying effort to a first brake:

C. the improvement of motion transmission means for translating vehicular momentum to linear movement for application of effort to the other of said brakes, comprising:

1. a movable mounting means for said first brake;

a. said mounting means comprising a sliding mechanism including:

1. a supporting structure for said sliding mechanism fixedly mounted to the frame of said bicycle, and,

2. a mounting member slidably mounted thereon, said mounting member being movable in the direction of rotation of said wheels in response to the motion of said wheels and the braking effort of the brake in engagement with one of said wheels;

3. the further improvement in which said supporting structure is a post and said mounting member is a sleeve slidably mounted thereon, and;

2. linkage means in operative relation with said movable mounting member and said other brake for transmitting motion from said movable mounting member to said other brake and for application of brake engaging effort to said other brake.

3,842,947

ARRESTING DEVICE

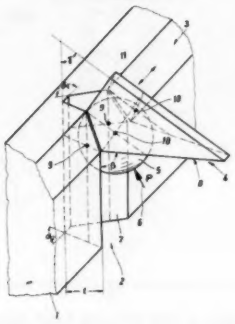
Detlef Hofmann, Eutinger Strasse, 7531 Kieselbronn bei pforzheim, Germany

Continuation-in-part of Ser. No. 59,451, July 30, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,922

Claims priority, application Germany, Aug. 1, 1969, 1939207

Int. Cl. B62c 1/02

U.S. Cl. 188—69 **9 Claims**



1. In combination on an arresting device; first and second members which are relatively moveable in a predetermined direction, said members having portions in adjacent parallel relation and parallel to the direction of relative movement of said members, each said portion having at least one groove means therein opening toward the other of said portions and extending at an angle to said direction, a groove means in one of said portions registering with a groove means in the other of said portions when said members are in a predetermined relative position, each groove means having side walls which converge in a direction away from the other said groove means, said groove means when in registration defining a passage having four angularly related walls all extending at an angle to said direction, ball means of predetermined diameter receivable in said passage in simultaneous engagement with all of said four angularly related walls to arrest said members in said positions, said ball means being insertable into and withdrawable from said passage at one end of the passage, and a ball control element on one of said members located for movement thereof in the longitudinal direction of the groove means in the said portion of the respective member, said ball control element including means engaging said ball means and being movable for inserting the ball means into said passage and for withdrawing the ball means from said passage, said groove means being inclined relative to each other to cause said passage to diminish in cross section in a direction away from said one end thereof, said ball means engaging on the side thereof which faces directly away from the said one end of the passage.

3,842,948

DISC BRAKES

Ralph Nigel Douglas Fredrick, Bromsgrove, England, assignor to Girling Limited, Birmingham, England

Continuation of Ser. No. 106,738, Jan. 15, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,563

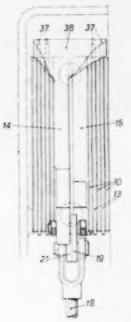
Claims priority, application Great Britain, Jan. 28, 1970, 4033/70

Int. Cl. F16d 55/04

U.S. Cl. 188—71.4 **4 Claims**

1. A disc brake of the kind in which friction discs rotatable in both directions are brought into engagement with opposed

surfaces in a stationary housing by axial separation of co-operating pressure plates located between the friction discs and maintained in parallelism in the off position of the brake, balls being housed in complementary inclined recesses in the adjacent faces of the pressure plates, and on application of the brake the pressure plates move angularly with the friction discs until one plate is arrested by a stop, the other plate continuing to move angularly to produce a servo action, at least two rotatable friction discs on each side of said pressure plates and at least one intermediate disc location between



adjacent friction discs on each side of said pressure plates, means affording an operative connection between all of said intermediate discs selectively to each of said pressure plates depending on the direction of rotation of the friction discs, said means being constructed and arranged that all of said intermediate discs on both sides of said pressure plates transmit torque in both directions of rotation of the friction discs to whichever pressure plate is acting as the servo plate while allowing relative rotational movement between said intermediate discs and whichever pressure plate is arrested by its stop according to the direction of rotation of the friction discs.

3,842,949

DISC BRAKES

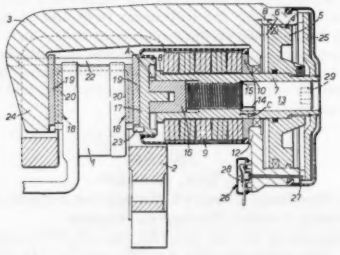
Charles Newstead, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Feb. 2, 1973, Ser. No. 329,019

Claims priority, application Great Britain, Feb. 28, 1972, 9147/72

Int. Cl. F16d *55/18*

U.S. Cl. 188—170 **9 Claims**



1. In or for a vehicle wheel disc brake having a rotatable disc, a spring brake actuator which comprises a friction pad assembly for frictionally engaging said disc to apply the brake, a thrust transmitting assembly acting on said pad assembly in a brake-applying direction, and a fluid pressure motor including spring means, a pressure responsive member operable to oppose said spring means and mechanical stop means limiting movement of said pressure responsive member in said brake applying direction, said thrust transmitting assembly comprising a strut of adjustable length having a first part fast with said pressure responsive member, and a second part manually adjustable axially relative to said first part, between an operative position in which said second part has simple abutting engagement with said pad assembly and holds said first part clear of said pad assembly and an inoperative position in which said second part is released from simple abutting engagement with said pad assembly, said first part being held clear of thrust transmitting engagement with said pad assembly either by the application of fluid pressure to said pressure responsive member of said motor, or by engagement of said pressure responsive member of said motor with said mechanical stop means under the action of said spring means.

3,842,950

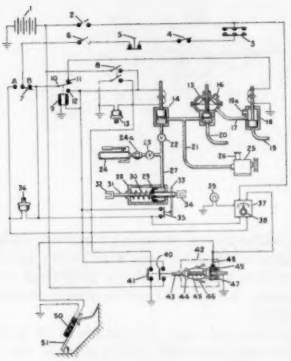
AUTOMATIC PARKING OR EMERGENCY BRAKE SYSTEM FOR MOTOR VEHICLES

John G. Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 135,193, April 19, 1971, abandoned. This application May 31, 1973, Ser. No. 365,556

Int. Cl. F16d *71/02*

U.S. Cl. 188—170 **7 Claims**

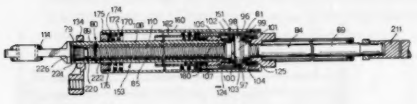


1. In a vehicle brake mechanism, a cylinder, a shaft axially movable through the cylinder, a piston carried by the shaft, said shaft being connected to brake-applying mechanism, means including a hydraulic pump and hydraulic line means connected to the cylinder for supplying hydraulic fluid therein and against one face of the piston to thereby cause the shaft to move in a direction to produce brake release, spring means contained within the cylinder and producing a pressure against the second face of the piston in opposition to the hydraulic pressure to thereby cause application of the brakes, valve means effective to retain the brakes in a released condition, and a normally open valve in the hydraulic line means, said normally open valve being operable to momentarily restrict hydraulic fluid, thereby increasing the pressure of said hydraulic fluid and diverting a portion of said increased pressurized hydraulic fluid to the brake cylinder, charging said cylinder and releasing said brakes, and means operable after said brakes are released for closing said valve means to hold the increased fluid pressure in said cylinder and for opening said normally open restrictive valve.

3,842,951
TWO WAY AUTOMATIC BRAKE ADJUSTER

Luciano Farello, Turin, Italy, assignor to Wabsco Westinghouse S.P.A., Turin, Italy

Filed Dec. 10, 1973, Ser. No. 423,600
Int. Cl. F16d 65/66
U.S. Cl. 188—202 8 Claims



1. In a single nut type brake adjuster adapted to form a part of a railroad car brake rigging as a force transmitting device, and including a rod member provided with a screw portion at one end thereof and means adjacent the other end thereof for securing into the rigging, a housing member mounted in telescoping relation to the rod member screw portion at one end thereof and including means adjacent the other end thereof for securing same into the rigging, resilient means for biasing said members in a slack take up direction from an extended relation to a contracted relation in which said rod member is withdrawn inside said housing member a suitable amount, a nut threadedly received on said screw portion of said rod member and disposed within a portion of said housing member, said housing member portion carrying a stop clutch assembly including spaced seats adapted to be engaged by opposing clutch surfaces of said nut, and means for actuating said nut during operation of the brake rigging to rotate in slack take up and let out directions as required to maintain the stroke of the rigging brake cylinder of substantially uniform length, including slack take up controlling means comprising an actuator including a member mounted on said housing member for relative shifting movement therebetween and longitudinally thereof in response to brake cylinder overtravel, and means for utilizing said relative shifting movement to effect biasing of said nut to rotate in a slack take up direction, the improvement wherein:

said housing member portion is secured to said other end portion thereof for rotational movement relative thereto, a rotatable casing received over said housing member portion for shifting movement longitudinally of the adjuster and extending over said rod member at one end of said casing and over said housing member one end at the other end of said casing,

said resilient means engaging between said housing member portion and said casing for frictionally keying them together for rotation in unison,

said casing including an abutment structure for acting on said nut under the biasing action of said resilient means to draw said nut against one of said seats to preclude rotation thereof with respect to said rod member in the riding relation of the adjuster,

a take up compression spring interposed between said housing member one end and said nut,

with said nut being biased against one of said seats by said resilient means in the riding relation of the adjuster,

said utilizing means comprising said actuator member being applied to said casing other end in response to brake cylinder overtravel to shift said casing to relieve said nut of the biasing action of said resilient means whereby said compression spring is operative to rotate said nut in a slack take up direction,

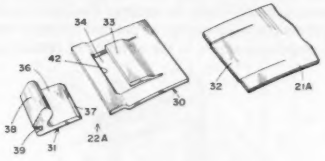
said nut being drawn against the other of said seats to transmit thrust forces through said adjuster on application of forces to said adjuster in opposition to said resilient means,

whereby, in the riding relation of said adjuster said nut, said housing member portion and said casing are locked together as one rotatable unit relative to said rod member, and manual rotation of said casing will rotate said nut relative to said rod member to adjust the position of said nut relative to said rod member, and on operation of said actuator member on brake cylinder overtravel, said resilient means acts as an overtravel spring.

3,842,952
TRANSMISSION BANDS

William R. Cook, Jr., 3006 Ridge Rd. N.E., Cortland, Ohio 44410

Filed Dec. 1, 1972, Ser. No. 311,350
Int. Cl. F16d 65/04
U.S. Cl. 188—249 3 Claims



1. A band construction for an automatic transmission, comprising:

a circular steel band provided with a brake lining on its inner surface, said band being of the slit type to provide two adjoining free ends,

an anchor portion, comprising a body conforming to the curvature of said steel band and overlying the outer surface of the latter at one of said free ends, and fixed thereto,

said body having a front portion extending crosswise of and projecting beyond the said one free end, said front portion being radially and outwardly off-set with respect to the remainder of said body,

said body having an opening therethrough, formed by lancing and then displacing radially outwardly a central part of said body to form a rigid tongue and to define a rear edge of said front portion, said tongue and said front portion being outwardly off-set substantially the same amount from said body, the free lip of said tongue being spaced from and parallel to said rear edge of said front portion,

a clip attachable to said anchor portion, including a body slightly less in width than the opening in said anchor portion body, and having a head at its forward end, said head having a cross-slot,

the body of said clip being projectable into the opening in said anchor portion body to be disposed between said tongue and the outer adjacent surface of said steel band, the marginal portion defining the rear edge of said front portion being seated within said cross-slot in said head.

3,842,953
WHEEL-MOUNTED LUGGAGE

Paul Ferdinand Royet, Chanteloire, Aurec, France

Filed Feb. 7, 1973, Ser. No. 330,258
Int. Cl. A45c 5/14
U.S. Cl. 190—18 A 1 Claim

1. A wheel-supported carrier comprising:

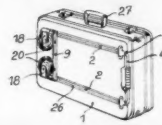
a casing of generally rectangular parallelipedal configuration with a broad base defined by a pair of longitudinal edges and a pair of transverse edges;

a pair of bushings mounted on said base parallel to and adjacent to each said longitudinal edge

a pair of wheels each connected to a cylindrical rotatable sleeves and mounted on said base about respective pivotal axes generally parallel to said longitudinal edges whereby the axes of said wheels can assume a retracted

position perpendicular to said base and an operative position generally parallel thereto upon pivotal movement of said sleeves about their relative axes;

said sleeves fixed to said casing along said base in said bushings, each sleeve having an end portion of larger diameter than the remainder of said sleeve each bushing and the respective end portion of said sleeve having camming engagement confronting faces, one of the confronting faces being formed with a recess defined between a steep flank and an inclined flank and the other confronting face being formed with a projection generally complementary to said recess and formed between a steep flank and an inclined flank whereby the steep flanks of the confronting faces abut one another in said operative position to limit further rotation of each sleeve in the sense tending to swing the respective wheels of its retracted position while the inclined flanks of the confronting faces mutually engage to prevent opposite rotation of the respective sleeve in the absence of relative axial displacement of each bushing and the respective sleeve; and a cross member fixing said bushings to said casing and extending parallel to one of said pairs of edges;



a respective handlebar member received in each sleeve and axially displaceable therein;

cooperating formations on each handlebar member and sleeve for operatively coupling same to rotate said sleeves and the larger end portion connected thereto to swing the respective wheels out of their retracted positions and into their operative positions upon axial telescoping withdrawal of the handlebar members from the respective sleeves; and

means for mounting said bushing on said casing for axial movement relative to the respective sleeves to permit reverse rotation of said larger end portions of said sleeves to the retracted position upon telescoping of said handlebar members into said sleeves upon unloading of said wheel and the camming engagement of the inclined flanks of the confronting faces.

3,842,954

CLUTCH WITH CENTRAL PIN RELEASE BEARING

Rudolf Honemann, Flechtorf Sudetenring, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Mar. 8, 1973, Ser. No. 339,363

Claims priority, application Germany, Mar. 10, 1972, 2211521

Int. Cl. F16d *23/12*

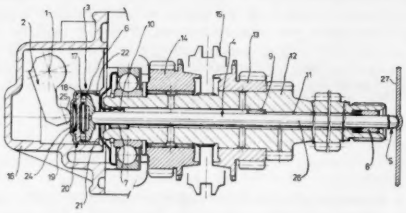
U.S. Cl. 192—96 **8 Claims**

1. Apparatus for mechanical operation of a clutch that is arranged between an engine and a transmission, said apparatus comprising:

a pressure rod having its first end in friction contact with that pressure plate of the clutch which is rotating at engine speed;

a clutch throw-out lever means for enabling mechanical operation of the clutch; and

a clutch release bearing located between said lever means and said pressure rod, said release bearing comprising a support element against which said lever means bears, a thrust bearing, a pressure spring located between the support element and the thrust bearing and a rotating element with one side in contact with the second end of said pressure rod and the other side in contact with the thrust bearing, said pressure spring being of such dimensions that for all operating conditions of the clutch it ensures a connection between said lever means and the pressure plate in the direction of a common axis of said release bearing, said pressure rod and said pressure plate,



said support element being in the shape of a housing for the other elements of said release bearing and having an entrance opening for said pressure rod of such a dimension as to retain the elements of said release bearing in one unit prior to incorporation of the release bearing in said apparatus.

3,842,955

DOT PRINTER

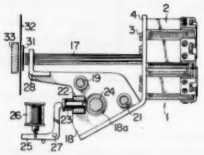
Kyuhachiro Iwasaki, Tokyo, Japan, assignor to Ricon Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1972, Ser. No. 306,873

Claims priority, application Japan, Nov. 20, 1971, 46-93487

Int. Cl. B41j *3/50*

U.S. Cl. 197—1 R **8 Claims**



1. A dot printer comprising:

a. a plurality of plungerless electromagnets of the clapper type each comprising a yoke formed of flat sheet material, a core secured to said yoke, a coil wound on the core, an armature having a base and an opposite free end, and non-resilient means for pivotally connecting the armature base to the yoke to allow pivotal movement of the armature toward and away from the core but to prevent movement of the armature transversely of the core axis, said base overlapping the yoke and maintaining contact with a continuous line thereof at all times, said opposite free end of the armature tapering in going from the base toward the free end, said armature being disposed substantially transversely of the core axis, said plurality of electromagnets being disposed radially to form a circle with the free ends of the armatures being disposed toward the center of the circle, said core having a triangular cross-section with an apex pointing to the center of the circle,

b. a plurality of needes for performing dot printing corresponding in number to the plurality of electromagnets, each of said needles having a free end and a base, and the needles being respectively operatively connected at their bases to the free ends of the armatures of the respective electromagnets,

c. resilient means for urging the armatures of the electromagnets to move away from the cores when the electromagnets are inoperative, and

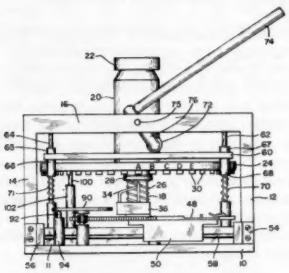
d. guide means for guiding the needles to cause the free ends thereof to be aligned with one another and disposed in a row in face-to-face relationship with a recording sheet, said electromagnets being selectively magnetized and rendered operative for selective actuation of the needles to perform dot printing on the recording sheet by selective passage of current to the coils of the electromagnets respectively associated with the needles to be selectively actuated.

3,842,956

CARD ENCODING MACHINE

Richard J. Reilly, and Glen L. Merrill, both of St. Paul, Minn., assignors to Cytec Development Inc., Ramsey, Minn.

Filed Oct. 26, 1972, Ser. No. 301,198
Int. Cl. B41j *1/22*
U.S. Cl. 197—6.4 **5 Claims**



1. Apparatus to impress on a card a code pattern of dots corresponding to selected letters and numerals comprising:

a base;

an anvil on said base;

a guide block above said anvil having a series of holes therein with a plurality of spring biased pins in the holes so as to be guided toward said anvil;

card carrying means on said base adapted to carry the card onto a first plurality of successive positions between said anvil and said guide means;

a code member having a plurality of groups of irregularities thereon, each group corresponding to a selected character, said code member comprising a generally disc shaped member disposed at least partly above said guide means, and slideably movable along and rotatable about a shaft positioned generally perpendicular to said base, said groups of irregularities spaced about the rim of said disc shaped member; and

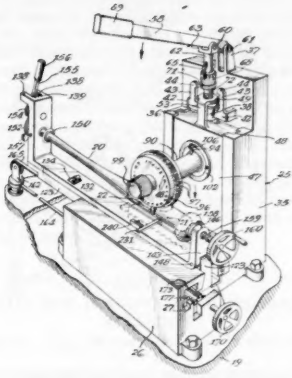
a moving means supported by said base on the opposite side of said code member from said anvil and adapted to move the code member against said plurality of pins to selectively move some of the pins against the card, the selected pins depending on the pattern of the irregularities in the group positioned proximate the pins said moving means including a cam means which comprises a lever pivoted in a frame extending up from said base, said lever having a roller at one end, said roller bearing against an intermediate member, said intermediate member mounted for vertical movement along a pair of guide shafts, movement of said lever operable to depress the intermediate member against spring means so as to move the code member an exact predetermined distance down against said spring biased pins.

3,842,957

ELECTRICALLY HEATABLE SELECTIVE MARKING APPARATUS

William G. Wilkin, Oak Park; Charles J. Wintergreen, Chicago, and James H. Stade, Elk Grove, all of Ill., assignors to Norman M. Shapiro, Chicago and William G. Wilkin, Oak Park, both of, Ill.

Continuation of Ser. No. 117,970, Feb. 27, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,576
Int. Cl. B41j *1/32, 19/42, 19/40*
U.S. Cl. 197—6.4 **152 Claims**



1. A marking device having reciprocating, drive shaft means for lowering and raising piston means for carrying marking means for marking a work piece, reciprocating piston means operatively connected to a lower portion of said drive shaft means so that during the reciprocating downstroke and upstroke of said drive shaft means said drive shaft means both actuate said piston means in a reciprocating manner and after so actuating said piston means reciprocate to some extent independently of said piston means, said piston means having collar means operatively connected to said piston means and positioned in spaced relationship to an upper portion of said piston means, said collar means having a collar opening for receiving said drive shaft means, said drive shaft means including a vertically extending, reciprocating drive shaft and marking regulator means for adjustably controlling or regulating the marking time and the pressure exerted on the work piece during the marking operation, said marking regulator means including at least one spring-biased, laterally slidable, detent pin for actuating said piston means positioned in said drive shaft, and said detent pin being urged laterally outwardly of said drive shaft to its extended position for actuating said piston means by resilient spring means, being moved inwardly of and through said collar opening when the outer end of said detent pin is so directed during the marking operation, and being moved outwardly to its extended position both below and above at least part of said collar opening by said spring means during the marking operation.

3,842,958

SHIFT MECHANISM

Manfred Link, Nuernberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany

Filed May 30, 1973, Ser. No. 365,253
Claims priority, application Germany, July 6, 1972, 2233169
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **4 Claims**

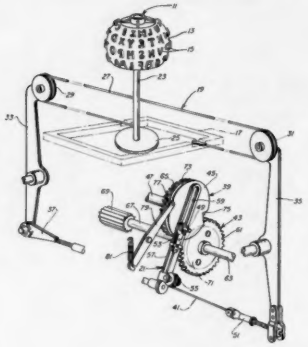
1. In a single element typewriter having a type element with upper and lower case characters arranged on different por-

tions and rotatable to present the upper and lower case type characters for printing, and rotating means including a shift lever pivotally movable for controlling the rotation of the type element, the improvement comprising:

a shift crank supported for rotational movement,

a crank pin secured to said shift crank at a location radially spaced from the axis of rotation of said shift crank and extending therefrom in an axial direction,

a band,



means connecting said band between the shift lever and the crank pin for pivoting the shift lever in response to the rotational movement of the shift crank, and

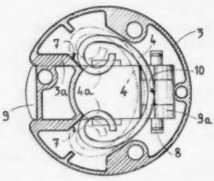
drive means operable with each actuation for rotating the shift crank substantially 180° to rotate the type element to present a different case of type characters for printing.

3,842,959

TYPE HEAD FOR TYPEWRITING MACHINE

Alfred Bauer, Rue Maujobia 95 2000, Neuchatel, Switzerland

Filed Sept. 17, 1973, Ser. No. 398,167
Int. Cl. B41j *1/60*
U.S. Cl. 197—52 **4 Claims**



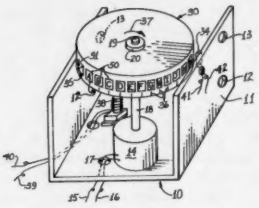
1. A type head for a typewriting machine having a grooved shaft adapted to mount the type head, said type head comprising, a generally spherical body, the body having a central passageway for receipt of the shaft, a generally U-shaped spring positioned on the body and substantially surrounding an opening of the passageway, the spring having a pair of return-bent arms positioned respectively on both sides of the opening and extending partially thereacross to bite on the central passageway and secure the head to the shaft by engagement of the arms in the groove when the spring is at rest, the head including a pair of converging inclined planes engaged between the arms of the spring, whereby when a force is exerted on the median portion of the spring the same will be moved radially towards the axis of said hole and the arms will be separated one from the other by said planes to release the arms from the groove.

3,842,960

LOW INERTIA IMPACT PRINT HEAD

Martin E. Gerry, 13452 Wiithrope St., Santa Ana, Calif. 92705

Filed June 27, 1973, Ser. No. 373,971
Int. Cl. B41j *1/32*
U.S. Cl. 197—53 **7 Claims**



1. A print head, comprising in combination:

a print wheel;

character-bearing permanently magnetized fonts magnetically retained at the periphery of said wheel;

a stationary hammer periodically magnetically coupled to the fonts for selectively releasing said fonts;

an individual non-permanently magnetizable member, one said member associated with each of the fonts, which is radially attached to the print wheel and intermediately positioned between the hammer and fonts periodically during rotation of the print wheel, each of the fonts exhibiting reduced moment of inertia during magnetic release from its associated member; and

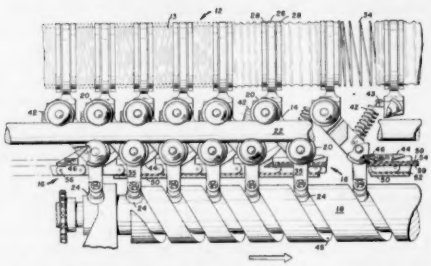
means integral with said wheel for enabling selection of a particular font.

3,842,961

VARIABLE SPEED HANDRAIL

Richard D. Burson, Highland, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed May 31, 1973, Ser. No. 365,708
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **11 Claims**



1. A variable speed handrail comprising:

a longitudinally deformable sleeve member having a surface for reception of the hands of users of the handrail and which surface is movable at differing speeds at various points thereon;

means for deforming the sleeve member longitudinally of its length so as to cause selected spaced points on the aforesaid surface of the sleeve member to move at differing speeds;

carriage members joined to the sleeve member at spaced points along its length, said carriage members being

driven by the aforesaid means at differing speeds at predetermined positions along the sleeve member so as to deform said sleeve member longitudinally of its length, thereby causing spaced points on the surface of the sleeve member to move at differing speeds; and,

chain means releasably connected to the carriage members for moving said carriage members along portions of the handrail, the chain means comprising a link chain having pivotable ratchet-like members connected to selected links of said chain, one each of the ratchet-like members engaging one each of the carriage members to provide releasable connection between the chain and the carriage members.

3,842,962
APPARATUS FOR CONVEYING PIECE ARTICLES, PARTICULARLY STACKS OF NEWSPAPERS, IN PERPENDICULAR DIRECTIONS

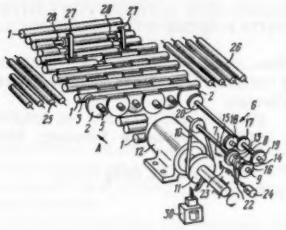
Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181; Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6, both of Moscow; Grigory Iosifovich Zaks, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed Dec. 21, 1972, Ser. No. 317,432

Claims priority, application U.S.S.R., Dec. 22, 1971, 1729194

Int. Cl. B65g *47/00*

U.S. Cl. 198—25 **2 Claims**



1. An apparatus for conveying stacks of newspapers and the like in mutually perpendicular directions comprising in combination:

a rollerway for conveying the stacks therealong in a first direction;

a series of rotatable rollers of said rollerway disposed relative to one another to define a series of clearance spaces between each adjoining one of said rollers;

a plurality of rotatable driving shafts disposed under said rollerway so that the axis of rotation of each shaft is perpendicular to the axes of rotation of said rollers;

a plurality of discs fixedly mounted on each of said driving shafts and disposed along the shafts such that respective ones of said discs on respective ones of said shafts are successively interposed in said clearance spaces, the discs on adjoining shafts overlapping one another in respective ones of said clearance spaces to define a checkered-pattern disposition of discs on said rollerway, each of said discs having a segment-shaped cutaway portion whose surface is lower than the top generatrix of said rollers so that the stacks may move unimpeded along said rollers in said first direction;

stop means adjustably disposed immediately rearwardly of said checkered-pattern disposition of discs for preventing movement of the stacks at a zone of deflection of the stacks, which zone defines a position on said rollerway when the stacks, from being conveyed in said first direction, are stopped by said stop means and deflected to move in a succeeding direction selectable from the two directions perpendicular to said first direction;

said stop means being pivoted in a vertical plane to be hideably disposed in grooved portions provided in said rollers to permit uninterrupted passage of the stacks beyond said stop means in said first direction;

pickup means operatively associated with said stop means for determining the position of the stacks at said zone of deflection and providing a response output representative thereof;

selectably-directional driving means operatively responsive to said response output for rotating said driving shafts with the discs in selectably respective predetermined opposed directions whereby when said stack is to be deflected in said zone of deflection said stop means stops said stacks therein and said pickup means provides said output response to said driving means whereupon said discs are rotated on said shafts in a predetermined direction to cause deflection of the stacks from movement in said first direction to movement in a second direction selected from the two directions perpendicular to said first direction depending upon said predetermined direction of rotation of the shafts by said selectably-directional driving means.

3,842,963
APPARATUS FOR TRANSPORTING A PLURALITY OF ELEMENTS

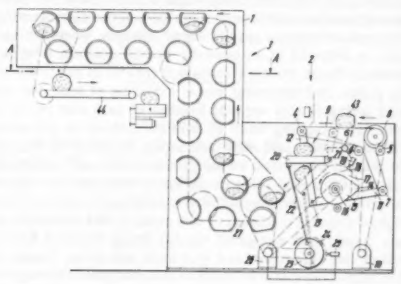
Kate Kemper, Lange Strasse 8-10, D-4835 Rietberg 2, Germany

Filed Feb. 24, 1972, Ser. No. 228,851

Claims priority, application Germany, Feb. 27, 1971, 2109363

Int. Cl. B65g *47/26*

U.S. Cl. 198—31 AC **14 Claims**



1. An apparatus for transporting a plurality of articles, comprising in combination:

a. a first, endless conveyor having an overall width sufficient to support a plurality of discrete articles in aligned spaced relation transversely to its direction of travel;

b. means for driving said first conveyor;

c. a second, linear conveyor positioned adjacent to and extending transversely to said first conveyor;

d. means for placing the articles uniformly spaced in a row on said second conveyor, said row extending transversely to said first conveyor;

e. means for driving said second conveyor, whereby the articles are carried by said second conveyor transversely to said first conveyor;

f. charging means for periodically and simultaneously dumping all the articles laterally off said second conveyor onto said first conveyor;

g. means for driving said charging means;

h. control means for periodically actuating said charging means as a predetermined number of said articles on said

second conveyor is periodically brought adjacent said first conveyor; and

i. arbitrarily settable means connected to said control means for altering the rhythm of actuation of said charging means, whereby the number of articles adjacent said first conveyor at the moment of each actuation of said charging means is variable so that the number of articles dumped simultaneously onto said first conveyor from said second conveyor is arbitrarily selectable.

3,842,964

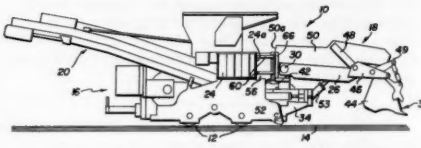
RESILIENTLY MOUNTED SWINGABLE SIDE PLATES FOR LOADING MACHINES AND THE LIKE

Haim J. Kamner, Palatine, Ill., assignor to Goodman Equipment Corporation, Chicago, Ill.

Filed Dec. 13, 1972, Ser. No. 314,812

Int. Cl. B65g *37/00*

U.S. Cl. 198—95 **8 Claims**



1. In a loading machine or the like having a main frame and a swing frame connected to said main frame for pivotal movement about a generally vertical axis adjacent one end of said main frame, said main frame and said swing frame each having laterally spaced generally upstanding side panels defining channel means therebetween along which material may pass, said side panels having adjacent end surfaces spaced apart a first distance when the swing frame is disposed in one pivotal position relative to the longitudinal axis of the main frame and being spaced apart a second lesser distance when the swing frame is disposed in an opposite pivotal position relative to said main frame; the combination therewith of relatively rigid side plates, and mounting means including at least one elongated spring fixedly secured to each of said side plates and resiliently mounting each of said side plates in upstanding relation between said main and swing frames such that each side plate is positioned to substantially close off and prevent passage of material through the space between the adjacent end surfaces of the associated side panels throughout the full range of pivotal movement of said swing frame relative to said main frame, said elongated springs being disposed between each of said side plates and said main and swing frames that loads impacting said side plates as material passes through said channel means are substantially absorbed by said resilient mounting means.

3,842,965

SHEET PILE FEEDING DEVICE

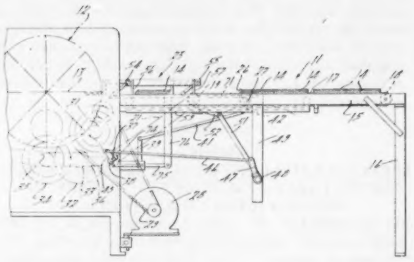
Ernst Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Mar. 8, 1973, Ser. No. 339,124

Int. Cl. B65g *37/00*

U.S. Cl. 198—103 **8 Claims**

1. A sheet pile feeding device comprising a plurality of transversely spaced endless belts, means continuously driving said belts in one direction, the receiving ends of the belts being accessible to placement of sheet piles thereon with random spacing, at least one sheet pile separating finger disposed between two of said belts, means for reciprocating said finger between a lower position below the level of said belts so as to permit a sheet pile to be carried by the belts past the fingers, and an upper position in obstructing relation with the next sheet pile, said last-mentioned means causing ascent of the finger under the rear portion of the first sheet pile so that it will stop the next sheet pile even though it abuts the preceding pile, a pusher assembly reciprocably mounted above said belts between forward and retracted positions, said pusher assembly comprising a carriage and at least one pusher movably mounted on the carriage, means for successively raising said pusher, retracting said carriage, lowering said pusher behind



a sheet pile released by the fingers, and advancing said carriage, said last-mentioned means being synchronized with the means for raising and lowering said finger, and a work holding carriage for receiving sheet piles delivered by said pusher assembly, and means for indexing said work holding carriage in synchronism with the reciprocating pusher assembly movement.

3,842,966

TRAVELLING MINE ROOF SUPPORT WITH SCRAPER CONVEYOR FOR USE WITH MECHANICAL MINING APPARATUS

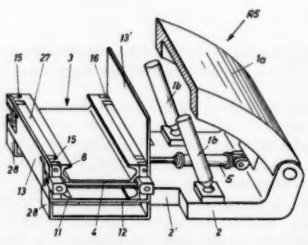
Guenter Blumenthal, Westerholt, and Reinold Krohm, Herne, both of Germany, assignors to Kloeckner-Werke AG, Duisburg, Germany

Filed Feb. 28, 1973, Ser. No. 336,891

Claims priority, application Germany, Mar. 7, 1972, 2210897

Int. Cl. B65g *21/12*

U.S. Cl. 198—126 **21 Claims**



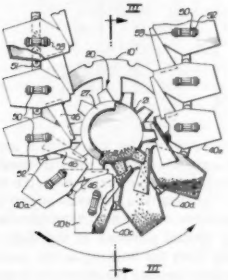
1. A travelling mine roof support comprising, in combination, frame means for said mine roof support, said frame means having a base plate adapted to engage the floor of a mine gallery; a slide in form of U-shaped upwardly open trough having a spaced side walls and a bottom wall and being arranged at that side of said base plate which in operation faces the mine face of the gallery; fluid operated cylinder and piston means connected to said frame means and said slide for moving said frame means and said slide relative to each other towards and away from said mine face; a scraper conveyor having an upper and a lower run; and conveyor channel means arranged in said trough for guiding said upper and said lower run of said scraper conveyor, said conveyor channel means comprising a guide member for guiding said upper run of said

scraper conveyor and having a pair of transversely spaced side wall profiles connected at the bottom ends thereof by a transverse wall upwardly spaced from said bottom wall of said trough, hinge means for hingedly connecting one of the side wall profiles of said guide member to one of said side walls of said trough tiltable about a substantially horizontal axis between a working position in which said transverse wall extends substantially parallel to said bottom wall and a raised position in which said transverse wall is upwardly tilted, and releasable locking means for connecting the other side wall profile to the other wall of said trough, the lower run of said scraper conveyor being guided in the space between said transverse wall of said member and said bottom wall of said trough.

3,842,967
ROTATABLE DISTRIBUTOR-FEEDERS TO TRAVELING RECEPTACLES

Richard A. Davis, 115 S. H St., Oxnard, Calif. 93030

Filed Apr. 30, 1973, Ser. No. 355,548
Int. Cl. B65g *17/12*
U.S. Cl. 198—140 **8 Claims**



1. A distributor-feeder for supplying particulate material by gravity to a series of spaced receptacles during movement along an arcuate path in a virtually vertical plane, said distributor-feeder comprising:

a cylinder having a closed end and mounting means connected to said closed end for rotation of said cylinder about a horizontal axis concentric with the arcuate path of a series of spaced receptacles moving below said cylinder;

a frusto-conical guide with its base connected to the other, open end of said cylinder, the small end of said guide being adapted to receive a conduit associated with a source of particulate material;

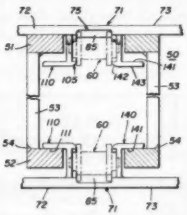
a plurality of elongated, horizontally extending, spaced feeder ports in the cylindrical wall of said distributor, each port including a nozzle provided with walls extending outwardly of said cylinder.

3,842,968
SNAP-ON ATTACHMENT

Robert W. Owens, Blue Island, Ill., assignor to Velten & Pulver Inc., Chicago Ridge, Ill.

Filed Nov. 19, 1973, Ser. No. 416,734
Int. Cl. B65g *17/00, 15/30*
U.S. Cl. 198—189 **7 Claims**

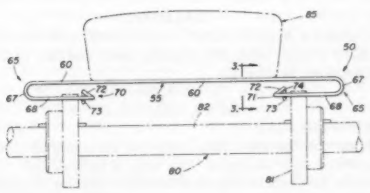
1. An attachment for carrying articles on an articulated chain conveyor having a plurality of chain links joined together by pin links with a recess in at least one edge thereof, said attachment comprising a base having a first thickness and providing a support surface to carry articles on the associated conveyor, spaced apart legs depending from said base opposite said support surface and substantially normal thereto for mounting said attachment on the associated conveyor, said base having an area of reduced thickness between said legs to accommodate flexure of the free ends of said legs for mounting said attachment on the associated conveyor, and a reinforcing member on said area of reduced thickness opposite said support surface extending between said legs and having a limited width for reinforcing said base during flexure thereof, a recess in the inner surface of each of said legs shaped complementary to the associated pin link for receiving a pin link therein, each of said legs having a projection shaped complementary to the recess in the pin link and extending into said leg recess to fit within the recess in the pin link for trapping the pin link, whereby said legs and the recesses therein are normally spaced apart a distance sufficient to accommodate an associated pair of the pin links therebetween with said projections in position to engage and trap the associated pair of pin links in said leg recesses, bending deformation of said base in a direction away from said legs resulting in the free ends of said legs being moved apart a distance sufficient to permit said legs to be positioned astride an associated pair of pin links for engagement and trapping of the pair of pin links by said legs and said projections, subsequent bending deformation of said base in a direction away from said legs resulting in the free ends of said legs being moved apart a distance sufficient to disengage said legs and said projections from the associated pair of pin links previously engaged and trapped thereby.



3,842,969
CONVEYOR BELT

Maynard R. Euverard, Clarendon Hills, Ill., assignor to Velten & Pulver Inc., Chicago Ridge, Ill.

Filed Apr. 6, 1973, Ser. No. 348,650
Int. Cl. B65g *15/30, 15/48*
U.S. Cl. 198—193 **7 Claims**



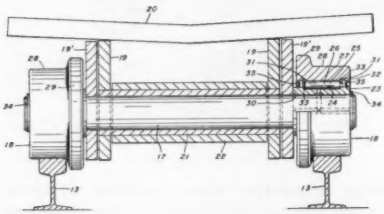
1. A conveyor belt to be driven by a toothed sprocket and comprising a plurality of interconnected individual links, each link including a rod shaped to provide an article conveying portion having at each end thereof an inwardly directed drive engaging portion joined thereto by an integral bight portion, the article conveying portions of the links forming a planar conveying surface and the drive engaging portions being spaced away from said planar conveying surface, each drive engaging portion having a hook near the inner end thereof for engagement with an adjacent drive engaging portion of an adjacent link, thereby loosely to interconnect adjacent links at

said drive engaging portions with said drive engaging portions being entirely spaced apart from said article conveying portions of said conveyor belt to prevent contact between articles conveyed on the planar conveying surface and said drive engaging portions.

3,842,970
SLAT CONVEYOR

Lawrence A. Brenner, 1423 Stallion Ln., Westchester, Pa. 19380, and Charles H. Scholl, 233 W. Main St., Adamstown, Pa. 19501

Filed May 4, 1972, Ser. No. 250,160
Int. Cl. B65g *15/30;* **H03k** *19/08*
U.S. Cl. 198—195 **8 Claims**



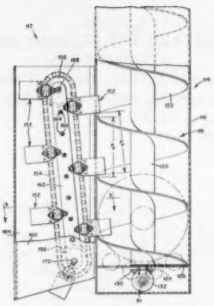
1. In combination with a slat conveyor assembly comprising a plurality of linked wheeled segments including support wheels mounted on opposed ends of a non-rotatable support shaft, parallel pairs of linking means extending between the support shafts of succeeding wheeled assemblies, the linking means of each pair spaced apart and mounted on opposed ends of the support shaft inwardly from the support wheels, and article support means mounted on the linking means, the wheeled assemblies being adapted to be coupled to drive means for advancing the conveyor assembly, the improvement comprising an improved support wheel having a non-rotatable generally cylindrical inner race fitted on the end of the support shaft, said inner race extending inwardly along the support shaft in abutting relationship with the linking means, said inner race having a grooved exterior surface portion, serving as a raceway, bearing means fitted within the raceway, and an annular rotatable outer wheel portion overfitting the non-rotatable inner race and spaced therefrom by the bearing means, with the outer surface of the rotatable outer wheel portion riding upon a conveyor support surface.

3,842,971
AUGER AND PADDLE CONVEYOR APPARATUS

Richard Wayne Hook, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 19, 1973, Ser. No. 325,177
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **11 Claims**

1. In material-conveying apparatus including an elongated, rotatable auger having a core with a helical flight secured thereto, the flight having a helical outer edge and a continuous leading material-engaging surface with axially spaced portions, the flight further having a substantially uniform pitch dimension so that axially aligned portions thereof are uniformly spaced, and an elongated housing having an arcuate wall portion at least partially enclosing the auger and disposed adjacent and substantially concentric to the outer edge of the flight, the flight being operative to engage and convey material along the housing when the auger is rotated, paddle means cooperable with the auger to assist in conveying material, said paddle means comprising: a first roller disposed adjacent to and spaced outwardly of the housing wall; a second roller spaced from said first roller in the direction in which material is conveyed by the flight and spaced outwardly of the housing wall a distance greater than said first roller; an endless flexible element drivingly trained around said first and second rollers and having drive and return runs, the drive run lying on a line angled away from the housing wall in the direction in which material is conveyed by the flight; drive means connecting the auger and the endless flexible element for driving the latter so that the drive run thereof moves along said line in the direction in which material is conveyed by the flight as the auger rotates; a plurality of paddles each having a material-engaging face and leading and trailing edges, said paddles being mounted on the endless flexible element so that the trailing

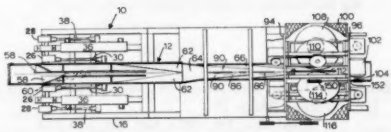


edges of adjacent paddles are spaced at a uniform pitch dimension which is greater than the pitch dimension of the flight means for moving the paddles being movable with the endless flexible element so that the material-engaging faces of the paddles on the drive run extend through the housing wall between axially spaced portions of the flight and are withdrawn outwardly from the housing as the portion of the endless flexible element forming the drive run is moved along said line, said means moving the paddles with sufficient speed so that the distance between the trailing edge of each paddle and the adjacent material-engaging surface of the flight increases as the paddle is moved through the housing.

3,842,972
CONVEYOR MEANS

Joseph A. Amori, 1270 Pine Dr., San Jose, Calif. 95125

Division of Ser. No. 93,071, Nov. 27, 1970, Pat. No. 3,717,087.
This application July 14, 1972, Ser. No. 272,014
Int. Cl. B65g *27/08*
U.S. Cl. 198—220 CB **1 Claim**



1. A conveyor system comprising a bed, pairs of hanger arms supporting the bed for back and forth movement, a shaft, a first pair of eccentrics on said shaft, pitman arms interconnecting said eccentrics and said bed operable to impart back and forth movement to the bed through rotative movement of the shaft, a pair of separate, laterally spaced, elongated counterweights located in vertically spaced relation to the bed and laterally outwardly therefrom, pairs of hanger arms supporting said counterweights for back and forth movement along a path

generally parallel to that of said bed, a second pair of eccentrics on said shaft, and pitman arms interconnecting said second pair of eccentrics and said counterweights operable to impart conjoint back and forth movement to said counterweights through rotative movement of the shaft, said pairs of eccentrics being positioned 180° out of phase with each other whereby said counterweights are moved in a direction opposite to that of said bed.

3,842,973

METHOD AND APPARATUS FOR TREATING KNIT GOODS, PARTICULARY HOSIERY MADE OF SYNTHETIC MATERIAL

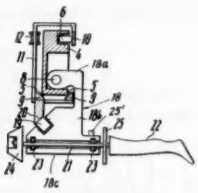
Horst Rothert, Berlin, Germany, assignor to Karl Fischer Apparate-und Roheleitungsbau, Berlin, Germany

Filed Feb. 18, 1972, Ser. No. 227,484

Claims priority, application Germany, Mar. 2, 1971, 2110487

Int. Cl. B65g *47/24*; **D06c** *5/00*

U.S. Cl. 198—240 **16 Claims**



1. Apparatus for transporting knit goods through the different stages of a treating installation, comprising in combination:

a frame;

a runner;

means for movably mounting said runner on said frame;

a form member over which the knit goods are drawn;

a supporting arm;

means for rotatably mounting said form member to said supporting arm;

means for pivotally fastening said arm to said runner;

drive means for displacing said runner along said frame in a continuous manner; and

means for intermittently rotating said form member as said runner is being displaced along said frame by said drive means.

3,842,974

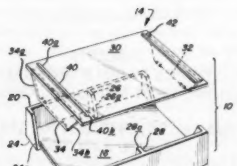
PLASTIC BOX

Robert K. Jacobsen, 3121 N. Nagel Ave., Chicago, Ill. 60634

Filed May 21, 1973, Ser. No. 362,422

Int. Cl. B65d *1/36, 43/02*

U.S. Cl. 206—45.34 **8 Claims**



1. In a rectangular plastic box for playing cards having a card-receiving base member and a removable cover, the improvement which comprises: said base member having a bottom, a pair of opposed upstanding side walls each of which extend along the long side of said bottom, and corner forming and card retaining end wall means at each end of each side wall, each of said end wall means being transverse to said side wall and said bottom and relatively short with respect to the length of said end so that a cut-away type space is defined at each end of the base between the ends of the end wall means along that end; and said cover member having a top of a size to overlie the upper edges of said side walls and said corner forming wall means, a pair of opposed end wall means depending from said top and of a size and shape to fit within the cut-away-type space, and tab means on the inner side of each depending end wall adjacent the lowermost edge thereof for releasable locking cooperation with the underside of the bottom of said base so as to firmly hold the top against the upper edges of said walls, and said cover being of a flexible material so that either of said depending walls can be flexed so as to effectuate releasable locking cooperation.

3,842,975

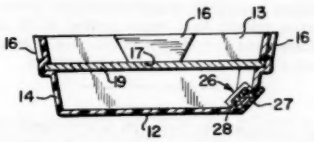
COMBINATION FOOD CONTAINER AND EATING UTENSIL

Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 290,975

Int. Cl. B65d *1/34, 43/04*

U.S. Cl. 206—72 **4 Claims**



1. A food container substantially rectangular in outline including a surrounding wall and a bottom wall, said surrounding wall tapering toward said bottom wall and having an endless inwardly extending shelf lying in a plane parallel with both the perimeter of said surrounding wall and said bottom wall and positioned substantially equidistantly between said perimeter and said bottom wall, the portion of the surrounding wall above said shelf having in the four sides thereof spaced inwardly extending depressions the lowermost edges of which lie in a common plane parallel with and spaced a short distance above said shelf whereby said lowermost edges and said shelf provide a series of spaced narrow grooves, a snap-in cover of flexible material having a thickness substantially equal to the distance between said shelf and said edges and dimensioned to have its four side edges register frictionally in said grooves, said shelf having one of the four corner portions thereof widened inward to form a platform on which a corresponding corner portion of said cover rests when the said cover edges register in said grooves as aforesaid, said portion of said surrounding wall above said cover providing a finger grip for grasping said container.

3,842,976

CARRIER

Joseph W. Dea, 969 Dixon Ave., Croydon, Pa. 19020

Filed Jan. 26, 1973, Ser. No. 326,991

Int. Cl. B65d *1/26, 85/62*

U.S. Cl. 206—203 **1 Claim**

1. A carrier of the tote box type which comprises

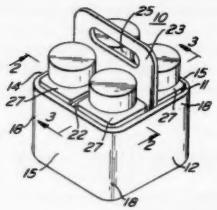
an outer rigid unitary housing of synthetic plastic and of box-like configuration open at the top and closed at the bottom,

said housing having vertical panels consisting of a front panel, a rear panel, and spaced side panels, and a horizontal bottom wall panel, and having

perpendicular centrally disposed vertical panels joining the front, rear, bottom and side panels and separating the interior of the housing into four compartments,

one of said central vertical panels extending upwardly above the upper margins of the other vertical panels,

said one of said vertical panels having a horizontally elongated opening therein for a hand hold, and



each of said compartments having a shock resistant and moisture resistant container of horizontal cross section complemental to that of each of the compartments and in snug fitting engagement in each compartment,

each of said containers having a closure and a measuring dispenser removably engaged with the closure and in covering relation to a major portion of the top of the container and providing a portion for gripping for removal of a container from its compartment.

3,842,977

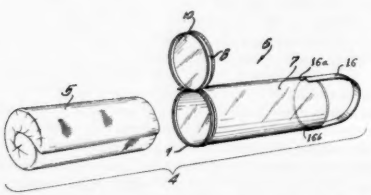
DISPLAY-CARRYING PILLOW-ENCLOSING CASING

Leo L. Hollander, 317 New St., Newark, N.J. 07103

Filed Jan. 9, 1973, Ser. No. 322,117

Int. Cl. B65d *77/00*; **A45c** *3/00*

U.S. Cl. 206—407 **4 Claims**



1. A packaged rolled pillow comprising in combination: an elongated tubular casing having side walls and having one closed end and having an opposite openable end with closure means for the opening and for secure closing of the openable end, said openable end including a lid structure with a tubular flange and the flange at at-least one point along the tubular flange is pivotably connected to a side wall along the length of the tubular casing and other points along the tubular flange being detachably secured to the remaining circumscribing side wall of the length of the casing, thereby providing for pivotal opening of the openable end of the casing, the tubular flange having a casing openable-end portion mounted across an edge of the tubular flange as a partially circumscribing slit along which is mounted the fastening means, the casing having a predetermined cross-section transversely across the casing longitudinal axis of the casing, the casing having a major portion of the side walls substantially translucent sufficiently for discernment of pillow color and designs of a packaged pillow; and a foam pillow of predetermined length and width campactly and tightly rolled along its length such that the pillow width continues to extend along substantially a linear pillow-width axis in the rolled state; said compactly rolled foam pillow being inserted within said tubular casing with the pillow's width axis extending about parallel with the casing's longitudinal axis; and a handle means mounted on the casing on an outer wall thereof, the handle means including a strap attached to opposite sides of the tubular casing at the closed end of the tubular casing.

3,842,978

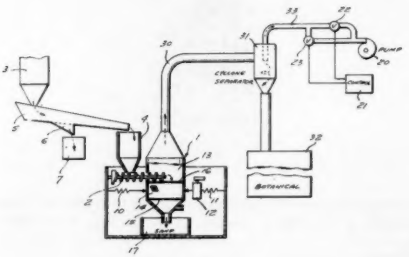
PROCESS AND APPARATUS FOR SEPARATING SAND FROM BOTANICAL MATERIALS

Thomas Wade Summers, Fern Creek, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Mar. 21, 1972, Ser. No. 236,693

Int. Cl. B03b *4/08*

U.S. Cl. 209—469 **4 Claims**



1. An apparatus for the dry separation of sand particles from botanical fines in which substantially all of the sand particles and fines have a size which is less than about **100** mesh comprising

a. a substantially enclosed chamber;

b. supports means positioned at the bottom of said chamber for permitting the discharge of sand from said chamber, said support means including a plurality of substantially spherical bodies having a diameter of 2 to 5 mm and a tolerance of ± 20 percent and constrained into substantially three-center close packing;

c. first means for supplying a mixture of sand and botanical fines having a size less than about 100 mesh into said chamber above said support means;

d. second means for moving an upwardly flow of gas through said support means into said chamber at a steady velocity sufficient to fluidize the mixture of sand and botanical fines above the support means; and

e. vibrating means for vibrating said support means.

3,842,979

TABLE TENNIS PADDLE AND BALL RACK

Harold S. Doelcher, 16801 Maiden Ln., Granada Hills, Calif. 91344

Filed Aug. 11, 1972, Ser. No. 277,677

Int. Cl. A47f *7/00*

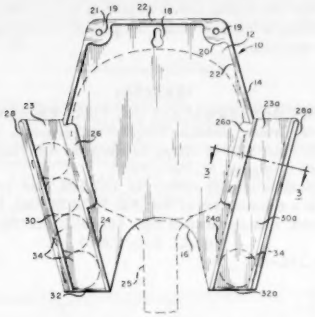
U.S. Cl. 211—14 **6 Claims**

1. A table tennis paddle and ball rack comprising:

a base member,

a pair of ball receptacles converging inward and downward, each comprising a pair of flanges mounted on and extending from said base member, two of said flanges defining cooperatively with said base member a paddle receiving,

abutting and retaining means therebetween to support the paddles, and retainer means upon said two flanges and



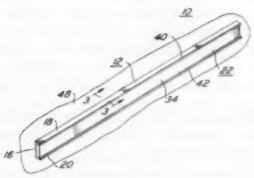
positioned to restrain removal of paddles from between said ball receptacles.

3,842,980

MAGNETIC SUPPORTING MEANS

Marlene Kushner, 4122 Barberry Dr., Lafayette Hill, Pa. 19444

Filed Jan. 15, 1973, Ser. No. 323,885
Int. Cl. A47g *21/14*
U.S. Cl. 211—60 T **2 Claims**



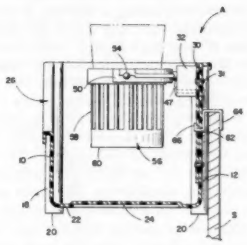
1. A magnetic supporting means comprising a holder which is an elongated channel of U-shaped cross section composed of magnetically conductive material having bottom and side portions, a unitary elongated magnetic source member received within and substantially coextensive with the channel of said holder proximate to its bottom and side portions, means secured with the bottom portion of said holder for attaching said holder to a supporting surface, the channel of said holder having a bottom portion and a pair of upstanding leg portions and said member comprising an elongated strip of flexible plastic material with permanently magnetized ferrite particles embedded therein received within and in contact with the bottom and leg portions of said holder, the leg portions of said holder each having an elongated edge extending beyond said member, the bottom portion of said channel having an elongated outer surface, said means for attaching said holder to a supporting surface comprising an elongated adhesive material secured with the outer surface of the bottom portion of said holder, said holder being made of a steel material and said plastic strip being substantially equal in length to said holder and is in close contact therewith, the strip of said member being of substantially rectangular cross section with a pair of flat top and bottom surfaces and a pair of side surfaces, the bottom surface of said strip contacting the bottom portion of said holder while the top surface of said strip faces outwardly, and said side surfaces of said strip each contact a respective leg portion of said holder, the edges of the leg portion of said holder each extending beyond the top surface of said strip, said member has anisotropic properties with permanently magnetized ferrite particles with the direction of magnetization being between the top and bottom surfaces of said strip and a thin cover strip of non-metallic material with an exposed top surface secured over the top surface and about the ends of said member, the edges and leg portions of said holder each extending beyond the exposed top surface of said cover strip.

3,842,981

APPARATUS FOR REMOVABLY HOLDING A LIQUID BEVERAGE CONTAINER

Thomas H. Lambert, 406 Monterey Rd., South Pasadena, Calif. 91030

Filed May 17, 1973, Ser. No. 361,296
Int. Cl. A47b *73/00*; B60n *3/10*
U.S. Cl. 211—74 **10 Claims**



1. A portable apparatus for removably holding a liquid beverage container in a vibratory environment created by a moving vehicle, said apparatus comprising:

a. a base wall,

b. a plurality of enclosing side wall sections integrally connected to each other forming an enclosing side wall projecting from said base wall and forming a chamber with an open top portion,

c. a first of said side wall sections in said partially enclosing side wall being cut away thereby forming an open access portion permitting introduction into and removal of a liquid beverage container from said chamber,

d. a reinforcing wall member located in said chamber in juxtaposition to a second of said side wall sections of said partially enclosing side wall and being rigidly secured thereto to reinforce said last named side wall section,

e. at least one retaining member having an encircling wall sized to removably retain said beverage container,

f. at least one gimbal structure operatively attachably connected to said reinforcing wall member and the second side wall section of said partially enclosing side wall and said retaining member, said gimbal structure permitting swingable movement of said retaining member in a pair of substantially perpendicular vertically located planes to maintain said container in a relatively vertically disposed position, whereby the retaining member and the liquid beverage container retained therein adjustably compensates for vibratory movement of said vehicle,

g. a plurality of spaced apart legs integral with and extending downwardly from said base wall so that said apparatus may be disposed on a supporting structure,

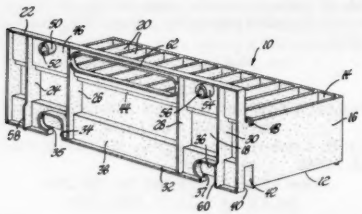
h. and means forming a plurality of apertures extending through the reinforcing wall member and the second of said side wall sections to receive hooks, whereby said apparatus may be suspended on a different supporting structure through said hooks.

3,842,982

STACKABLE STORAGE BIN WITH INTERLOCK

James E. Joyce, 878 Darien Cir., Rochester, Mich. 48063

Filed Aug. 11, 1972, Ser. No. 279,916
Int. Cl. A47f 3/14; B65d 21/00; A47j 47/00
U.S. Cl. 211—126 9 Claims



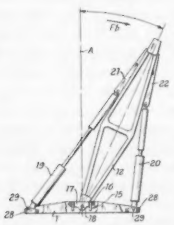
1. A storage bin or like article comprising the integral combination of a bin portion having a bottom, a rear wall, and a back member extending vertically above and defining a vertical continuation of said back wall, a vertical slot extending laterally across the bin to accommodate the upper portion of the back member of a similar bin whereby two or more bins may be disposed in a vertically-stacked array with the back member of a lower bin extending upwardly into the vertical slot of the next upper bin, and means for positively interconnecting the bins for permitting said stacked array to be carried as a unit, said means for positively interconnecting the bin including a projecting member on the upper portion of the back member of each bin and receiving means adjacent the slot of each bin, said projecting member and said receiving means being cooperable only when the back member of one bin projects into the vertical slot of another bin to lock the bins together upon a predetermined degree of relative lateral displacement therebetween.

3,842,983

ARTICULATED JIB FOR CRAWLER TRACTORS AND THE LIKE

Claudio Dolza, 66 corso Francia, Turin, Italy

Filed May 29, 1973, Ser. No. 364,691
Claims priority, application Italy, June 9, 1972, 68842/72
Int. Cl. B66c 23/00
U.S. Cl. 212—8 R 9 Claims



1. A crawler tractor comprising:

a cantilevered lifting jib directly articulated on the tractor for pivotal movement in a vertical plane which is transverse relative to the tractor;

pivot means having a pivot axis substantially parallel to said transverse plane to support the lifting jib for pivotal movement in a longitudinal plane which is substantially parallel to the longitudinal axis of the tractor in response to the inclination of the tractor; and

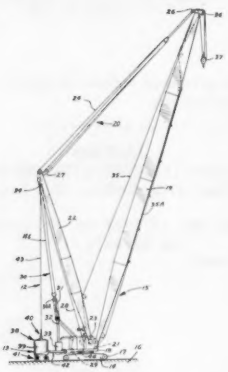
jack means located in a common plane with the jib for moving the jib in said longitudinal plane, so as to displace the lifted load in relation to the centre of gravity of the tractor substantially parallel to the said longitudinal axis so that the overall centre of gravity of the lifted load and machine is retained within the ground-contacting track of the machine.

3,842,984

CRANE COUNTERBALANCING TRAILER ASSEMBLY

Archer W. Brown, Mendota Heights, and James L. Montgomery, St. Paul, both of Minn., assignors to American Hoist & Derrick Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 102,500, Dec. 29, 1970, which is a continuation of Ser. No. 767,670, Oct. 15, 1968, abandoned. This application Dec. 11, 1972, Ser. No. 313,762
Int. Cl. B66c 23/76
U.S. Cl. 212—49 10 Claims



1. In a load lifting machine having a crane carrier supported with respect to a generally horizontal supporting surface, a crane deck rotatably mounted on a generally vertical axis with respect to said crane carrier, an upstanding mast and an upstanding boom both pivotally mounted on a forward portion of the deck for movement in a vertical plane passing through the axis of rotation of the crane deck with respect to the carrier, a first linkage between an upper portion of said mast and an upper portion of said boom, means for varying the length of said first linkage, a second linkage between an upper portion of said mast and a rear portion of said deck, means for varying the length of said second linkage, a load line extending over the point of said boom, means for rotating said deck, means for powering the load line, and a load handling device supported by the load line hanging from the point of the boom; the improvement including:

A. an independent counterbalancing trailer assembly spaced and separated from the rear of the crane deck, said trailer assembly including: a counterweight trailer and a plurality of wheel assemblies with wheels to support the weight of the trailer assembly on said supporting surface independent of the support of the deck of the load lifting machine, said wheel assemblies including means to support said wheels so that they are capable of supporting movement of the counterbalancing trailer in an arc about the axis of crane deck rotation;

B. coupling arms pivotally connecting the counterweight trailer to the rotatable crane deck to permit vertical movement of the trailer with respect to the deck but to cause the trailer to rotate with the deck as the deck rotates on the carrier about its generally vertical axis; and

C. a third linkage from the counterweight trailer to the top end of the mast, whereby the length of the second

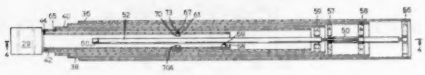
linkage can be varied with respect to the length of the third linkage so that substantially the entire counterbalancing load of the counterweight trailer acts on the mast through the third linkage before further counterbalancing load is applied to the crane deck through the second linkage.

3,842,985

MEANS FOR EXTENDING AND RETRACTING CRANE BOOM SECTION

George E. Svede, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,584
Int. Cl. B66c *23/04*
U.S. Cl. 212—55 **1 Claim**



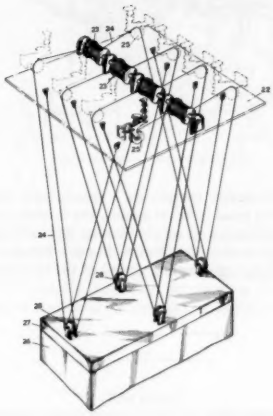
1. In a mobile crane; a vehicle, a telescopic boom pivotally mounted on said vehicle and comprising a base section, a first section telescopable within said base section; a second section telescopable within said first section, a third section telescopable within said second section and having two longitudinally spaced apart forward and rear pin holes therein, a fourth section telescopable within said third section; an extendable and retractable operating cylinder connected between said base section and said first section for extending and retracting said first section; a first extendable and retractable cylinder connected between said first section and said second section for extending and retracting said second section, said first cylinder having a pin hole therein; a second extendable and retractable cylinder connected between said second section and said third section for extending and retracting said third section; means to extend and retract each of said cylinders; a rearward remotely operated pinning means mounted on the interior of said fourth section and having a rear pin extendable for releasable engagement with said pin hole in said first cylinder; a forward remotely operated pinning means mounted on the interior of said fourth section forwardly of said rearward pinning means and having a forward pin extendable through a hole in said fourth section and releasably engageable with either of said pin holes in said third section; each of said forward and rearward pinning means comprising a solenoid for extending and retracting its pin and wherein the solenoid for said rearward pinning means is deenergizable to retract its pin and the solenoid for said forward pinning means is deenergizable to extend its pin, said rear pin normally being retracted and disengaged from said pinning hole in said first cylinder while all said sections are telescoped, said forward pin normally being extended and releasably engaged with said rear pin hole in said third section while all said sections are telescoped; said second cylinder being extendable to effect extension of said third section and said fourth section pinned thereto; means to remotely operate said forward and rearward pinning means while said third and fourth sections are extended to extend said rear pin into releasable engagement with said pin hole in said first cylinder and to retract said forward pin from engagement with said rear pin hole in said third section; said second cylinder being retractable to effect retraction of said third section while said fourth section is maintained extended by being pinned to said first cylinder; and means for energizing or deenergizing said solenoids simultaneously to remotely operate said forward and rearward pinning means while said third section is retracted to retract said rear pin from engagement with said pin hole in said first cylinder and to extend said forward pin into releasable engagement with said forward pin hole in said third section.

3,842,986

DEVICE FOR ACCURATELY POSITIONING A BODY SUSPENDED FROM CABLES

Leonard Hupkes, Heemstede, Netherlands, assignor to Werf Conrad & Stork Hijsch N.V.

Filed Jan. 27, 1972, Ser. No. 221,361
Claims priority, application Netherlands, Jan. 29, 1971, 1224/71
Int. Cl. B66c *19/00*
U.S. Cl. 212—125 **2 Claims**



1. Apparatus for suspending a body, comprising a trolley, a single drum means supported on said trolley, at least two pair of cables positively connected to said single drum means and said body and each cable of each pair extending at a substantial angle to the vertical and in non-parallel relation to the other cable of the pair and converging at said body, said drum means being drivable in rotation to cause said cables to raise and lower the body respectively at the locations where the cables are connected to said body, a plurality of pivotal support members mounted on the trolley, an equal plurality of sheaves each being supported on a respective support member for pivoting therewith, one cable passing on each sheave and being connected to the drum means and to the body, means acting on said pivotal support members to move each of the same and the respective sheaves supported thereby and means controlling the last said means to operate the same and move the plurality of pivotable support members for cancelling any difference in elongation of the cables and thereby obviate any tilting or eccentric movement of the body.

3,842,987

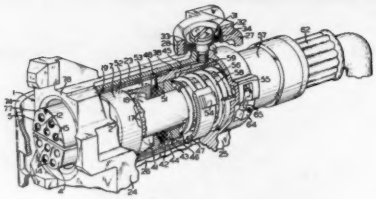
ELECTRICAL CONNECTOR PORTION FOR AUTOMATIC RAILWAY COUPLERS

Cesare Prada, Turin, Italy, assignor to Compagnia Italiana Westinghouse Freni e Segnali, Turin, Italy

Filed Mar. 29, 1973, Ser. No. 346,128
Claims priority, application Italy, Mar. 31, 1972, 68029/72
Int. Cl. B61g *5/06*
U.S. Cl. 213—1.3 **12 Claims**

1. An electrical connector device for an automatic coupler mating head for railway vehicles, said connector device comprising a cylindrical support casing fixedly mounted on the mating head and having a longitudinal groove formed internally and parallel to the axis thereof, a multiple contact unit including a cylindrical housing coaxially slidably mounted in said support casing and connected to an axially aligned bush having a radial projection formed thereon for riding in said groove for accommodating sliding movement of said contact

unit within said support casing, said contact unit having a plurality of electrical contact elements arranged thereon to make respective electrical connections with correspondingly arranged electrical contact elements of a counterpart electri-



cal connector device carried on a counterpart mating head when the latter head is thrust against the former, and a spring interposed between said support casing and said contact unit for resiliently cushioning thrust impact between the two contact units during coupling action of the mating heads.

3,842,988

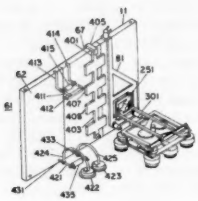
APPARATUS ACCOMMODATING PANEL CONSTRUCTION

Carl D. Russell, Tulsa, Okla., assignor to Aquarius, Inc., Lawton, Okla.

Division of Ser. No. 94,100, Dec. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 56,833, July 21, 1970, abandoned. This application June 21, 1972, Ser. No. 264,925

Int. Cl. B25j *3/00*

U.S. Cl. 214—1 SW **5 Claims**



1. Fluid orienting, and alignment apparatus for locating an orientable base in a desired position relative to a fixed base comprising, in combination a pedestal connection extending between the bases; a universal joint connecting the pedestal to one of the bases, and said pedestal being fixed to the other of said bases; a plurality of cylinders carried by the fixed base; a piston in each cylinder; a piston shaft for each piston extending upwardly to contact the orientable base respectively at different locations; a pair of valves each comprising a piston and cylinder; interconnections from a first one of said valves to a first side of the pistons in the cylinders carried by the fixed base; further interconnections from the other of said valves to the second side of the last mentioned pistons; and means for opening and closing said valves to enable fluid distribution to the pistons to locate the orientable base in the desired position.

3,842,989

APPARATUS FOR REVERSING ELONGATED BODIES

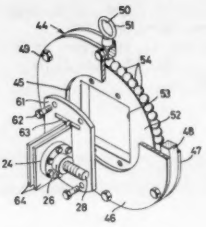
Atushi Nakamura, Osaka, Japan, assignor to Nittan Kohki Kabushiki Kaisha a/k/a Nittan Kohki Co., Ltd., Sakai Osaka, Japan

Filed Feb. 13, 1973, Ser. No. 332,167

Claims priority, application Japan, May 22, 1972, 47-51061; June 27, 1972, 47-64616

Int. Cl. B65g *7/00*

U.S. Cl. 214—1 QD **5 Claims**



1. A reversing apparatus for reversing an elongated body, said apparatus comprising a support member having a bore extending through the center thereof, said bore being of a larger diameter than the diameter of the elongated body, a rotary disk rotatably mounted on said support member, said rotary disk having a square hole through which said elongated member may be inserted, the member being supported therein, a nip-holding member support plate having a penetration hole extending therethrough, substantially with the same shape as a section of the elongated body and mounted on the peripheral portion of the square hole of the rotary disk, a pair of oppositely positioned nip-holding members detachably mounted on said rotary disk by means of said nip-holding member support plate, the penetration hole of said nip holding member support plate communicating with the hole of said rotary disk, the elongated body being rotated together with the rotary member by lifting the support member.

3,842,990

SYSTEM FOR LOADING A STACK OF SHEETS INTO A PLATEN PRESS

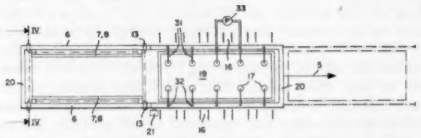
Manfred Posselt, Viersen, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Feb. 28, 1973, Ser. No. 336,716

Claims priority, application Germany, Mar. 1, 1972, 2209901

Int. Cl. B66c *1/42*

U.S. Cl. 214—1 BB **5 Claims**



1. An apparatus for displacing a stack of at least two sheets from a pickup station in a heated-platen press, said apparatus comprising:

a carriage displaceable horizontally between said station and said press;

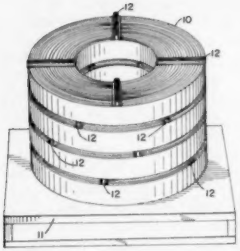
a pair of jaws on each side of said carriage, said jaws being elongated in the displacement direction of said carriage and dimensioned to extend over substantially the entire lengths of opposite edges of said stack;

means for closing said jaws on said opposite edges of said stack;
means for displacing said carriage from said station to said press with said jaws closed on said edges;
means for displacing said jaws transverse to said displacement direction;
a plurality of suction lifters spaced along opposite sides of said carriage downstream of said jaws; and
means for swinging said suction lifters on said carriage, said suction lifters advancing said stack after consolidation of said press.

3,842,991
METAL COIL SPACER

Thomas P. Koebel, Homewood, Ill., assignor to Zegers, Incorporated, Lansing, Ill.

Filed July 11, 1973, Ser. No. 378,169
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **9 Claims**



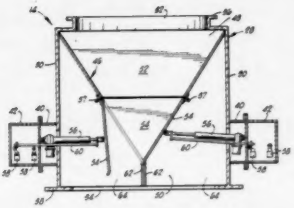
1. A spacer member forming one or more supports between stacked coils of metal comprising a formed hollow metal section having top and bottom horizontal load bearing walls of substantially equal area, one or more vertical load supporting walls connecting said load bearing walls, one of said load bearing walls comprising spaced-apart horizontal sections each connected to the other load bearing wall by a vertical load supporting wall, said spaced-apart horizontal sections extending in respectively opposite directions outwardly of the respectively associated vertical load supporting wall, and the distance between said spaced-apart horizontal sections is less than the width of said other load bearing wall.

3,842,992
APPARATUS FOR SELECTIVELY DISTRIBUTING BULK MATERIALS

Robert R. Herold, Forth Worth, Tex., assignor to Thomas Conveyor Company, Fort Worth, Tex.

Filed May 7, 1973, Ser. No. 358,131
Int. Cl. B65g *65/32*
U.S. Cl. 214—16 R **5 Claims**

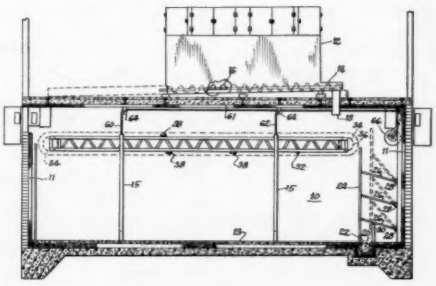
1. Apparatus for selectively distributing bulk materials into a multiple compartment storage bin comprising:
an enclosure having a top, an open bottom and closed sides, the top including a sealable inlet connection disposed therein and the bottom including a flange adapted to be sealingly connected to said multiple compartment storage bin;
a first partition formed in the shape of an inverted polyhedron disposed within the enclosure separting the enclosure into upper and lower sections;
second partition means disposed within the lower section of said enclosure dividing the lower section into a plurality of separate passageways, each of which sealingly communicates with the open bottom of said enclosure and with a storage compartment in said multiple compartment storage bin;
a plurality of triangular shaped doors disposed in said first partition positioned so that each of the doors communicates with one of said passageways and when opened, bulk material from said upper section of said enclosure is caused to flow by gravity through said doors and said passageways into said multiple compartment storage bin;
means for selectively opening and closing said doors attached thereto and to said enclosure; and
means for remotely indicating the open or closed position of each of said doors attached to said enclosure.



3,842,993
ICE RAKE FOR ICE MAKING APPARATUS

William F. Hagen, Argyle, Tex., assignor to Turbo Refrigerating Company, Denton, Tex.

Filed July 19, 1972, Ser. No. 273,327
Int. Cl. B65g *65/42*
U.S. Cl. 214—17 DB **3 Claims**



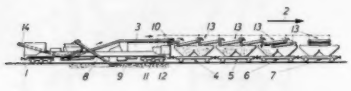
1. An ice rake mechanism comprising an elongate frame member, endless drive means movably mounted on the frame member to be rotatable about the frame member, and a plurality of horizontal flites fixed to the drive means for movement therewith, said flites including U-shaped channel members extending transversely to the frame member in a horizontal plane, each of the channel members including (at least one flange member extending away) spaced parallel flange members upstanding from the frame member, and a plurality of teeth fixed to (the) each flange member extending parallel thereto, with the teeth fixed to each flange (members) member (of adjacent flites) being staggered relative to each other, with said means being adapted to advance the flites relative to the frame member.

3,842,994

TRAIN OF FREIGHT CARS

Josef Theurer, Vienna, and Karl Folser, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 21, 1973, Ser. No. 417,894
Claims priority, application Austria, Jan. 12, 1973, 284/73
Int. Cl. B65g 67/08
U.S. Cl. 214—41 19 Claims



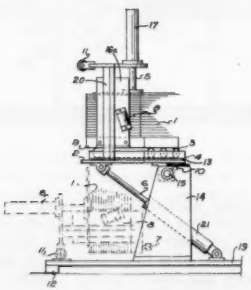
1. A train of at least two like freight cars arranged in succession, each of the freight cars comprising a storage bin defining a top opening delimited by two end edges spaced apart in the direction of the elongation of a track whereon the train is adapted to move, a conveyor having two ends and means bridging the top opening in said direction, the conveyor means having a plurality of conveyor portions including an endless conveyor band mounted for traveling in a conveying path extending in said direction, means for driving the endless conveyor band in reversible directions in said path, at least some of the conveyor portions being mounted for movement so that a selected one of its ends projects beyond a respective one of the end edges of the top opening and into overlapping relationship with an adjacent end of the conveyor means of an adjacent one of the successively arranged freight cars, and drive means for so moving the conveyor portions.

3,842,995

SHEET SQUARING APPARATUS

James Edward Dooley, Bridlington, England, assignor to T. Dooley & Co. Limited, Durham, England

Filed Dec. 4, 1972, Ser. No. 311,902
Claims priority, application Great Britain, Dec. 2, 1971, 55905/71
Int. Cl. B65h 31/40
U.S. Cl. 214—6 S 4 Claims



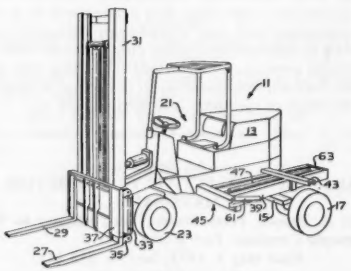
1. A sheet metal squaring apparatus comprising in combination: support means providing a pivot means on which a carrier means may be attached and pivoted; a carrier means including a base support structure receivable of a flat surface of a metal sheet bottom face for support of such metal sheet; the carrier means further including two separate flat-faced sides each extending uprightly from a plane in which the carrier means base support structure extends, and each flat-faced side extending laterally in a direction substantially perpendicular to the plane of the other flat-faced side; said carrier means being positioned and pivotably attached to the pivot means such that the base support structure is pivotable between alternate horizontal and substantially upright plane positions and such that when pivoted into the substantially upright position of the base support structure, the perpendicular planes are both pointed substantially angularly downwardly; clamp means mounted on the carrier means at a point such that stacked metal sheets are firmly clampable between the clamping means and the base support structure, the clamping means being adjustably clampable and releasable of a stack of metal sheets supported on the base support structure; and vibrator means mounted on the carrier means for selectively vibrating simultaneously the two separate flat-faced sides, the vibrator means including two separate vibrators one mounted fixedly on one of the two separate flat-faced sides and the remaining other vibrator mounted fixedly on the remaining other flat-faced side, and the vibrator means further including a micro-switch means for automatically activating the two separate vibrators when the carrier means is pivoted such that the base support structure extends in the substantially upright plane, and for automatically deactivating the vibration when the carrier means is pivoted to remove the base support structure from the substantially upright plane state.

3,842,996

LONG LOAD-NARROW AISLE TRUCK

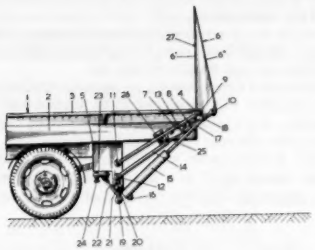
Walter M. Shaffer, Chesterland, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio

Continuation of Ser. No. 759,323, Sept. 12, 1968, abandoned. This application June 24, 1970, Ser. No. 56,053
Int. Cl. B60p 1/44
U.S. Cl. 214—75 G 10 Claims



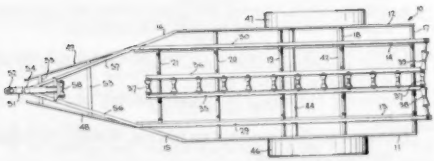
1. In a lift truck having a body and a mast assembly supporting at least a pair of lifting forks for engaging a load, means pivotally mounting said mast for movement relative to said body, a first load support member fixed on said body adjacent one end thereof for supporting a portion of a load substantially longitudinally parallel to said body, a second load support member including means movably mounting said second load support member adjacent a second end of said body for supporting another portion of said load, said mounting means moving said second load support member from said position adjacent said second end to a second position between said pair of lifting forks when said mast is moved to the same side as said support members, and means for transferring the load from said forks to said second load support member.

3,842,997
LIFTING DEVICE
Gerrit W. J. Sprikkelman, Apeldoorn, Netherlands, assignor to Avo Intern Transport B.V., Apeldoorn, Netherlands
Filed Oct. 31, 1973, Ser. No. 411,395
Claims priority, application Netherlands, Nov. 1, 1972, 7214777
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 P 7 Claims



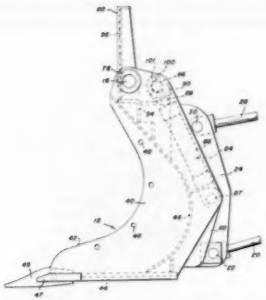
1. In a lifting device, for instance fitted as lifting platform assembly to a truck, a lifting platform, one or more parallelogram-shaped articulated rod-systems, by which rods or arms this platform is directly or indirectly pivotingly connected to a carrying structure fitted to the truck chassis, one parallelogram arm being capable of telescoping, and the platform being driven and controlled by a hydraulic power system, the platform having four positions: lifted approximately vertically at maximum height; lifted horizontally at maximum height; lowered horizontally on ground; and lowered in downward sloping position on ground and, in doing so, three different motions, a single power cylinder means being applied to perform all three motions, the pivot point of the lower parallelogram arm being connected to the carrying structure through a rocking lever, and the power cylinder means being pivotingly attached at one end to this rocking lever, characterized in that the power cylinder means is single acting and pushing, and the fixed pivot point of the rocking lever on the carrying structure is located between the point of connection of the lower parallelogram arm and the point of connection of the power cylinder means on the rocking lever.

3,842,998
BOAT TRAILER
Otis C. Borum, Jacksonville, Fla., assignor to Farenwald Enterprises, Inc., Lancaster, Pa.
Filed May 14, 1973, Ser. No. 359,891
Int. Cl. B60p *3/10*
U.S. Cl. 214—84 13 Claims



1. A boat trailer including a frame having a rear end and a front end, keel supporting means disposed on said frame and extending longitudinally along the central portion of said frame from said rear end toward said front end, and a pair of upstanding rail members disposed on said frame and extending longitudinally along said frame substantially parallel to and on opposite sides of said keel supporting means, the upper surfaces of said rail members being vertically raised relative to the upper surface of said keel supporting means, the relative vertical distance between said upper surfaces of said rail members and said upper surface of said keel supporting means gradually and uniformly increasing from said rear end of said frame toward said front end of said frame.

3,842,999
DEMOLITION BUCKET
Edward G. Asbury, Delmont, Pa., assignor to Asbury Universal, Inc., Murrysville, Pa.
Filed Jan. 19, 1973, Ser. No. 324,995
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 9 Claims

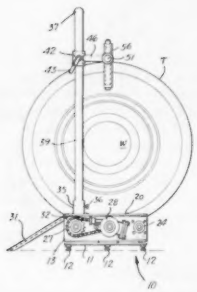


1. In a material handling apparatus, the combination comprising,
a bucket having a curved rear portion engaged in abutting relation with a pair of parallel spaced side walls and a bottom portion having a cutting edge extending forwardly thereof,
said bucket having an open forward end portion,
a clamp device pivotally connected in overlying relation with said bucket, said clamp device having a reinforced concave forward end portion and parallel spaced rib sections,
said parallel spaced rib sections rigidly support said clamp device forward end portion at opposite ends thereof,
striking means secured to the top and bottom of said clamp forward end portion for imparting impact forces to a stationary object,
pivot connecting means for removing said clamp device from connection to said bucket,
piston cylinder means for angularly moving said clamp device to a first preselected position spaced from contact with said bucket and to a second position with said clamp forward end portion in abutting relation with said bucket forward end portion such that an enclosure is formed between said clamp device and said bucket,
said piston cylinder means positioned rearwardly of said bucket, and
retaining means provided on said bucket rear portion for securing said piston cylinder means to said bucket and for maintaining said piston cylinder means in static operation when said clamp device is removed from connection to said bucket.

3,843,000
PAINTERS WHEEL SPINNER
Vern B. Bennett, 4601 Lake Rd., West Sacramento, Calif. 95691
Filed June 8, 1973, Ser. No. 368,018
Int. Cl. B65g *7/00*
U.S. Cl. 214—340 1 Claim

1. In a painters wheel spinner, a base plate, a plate circular in form supported on a plurality of spaced roller bearings

carried by said base plate, said circular plate being secured to the base plate by an axial vertical pivot, a frame member having a flat bottom wall with a pair of opposed side walls extending integrally upwardly therefrom in spaced parallel relation, said side walls having horizontal flanges integrally secured to their upper edges and laying in a horizontal plane, a screw member threaded through the bottom wall and circular plate for engaging the base plate to lock the circular plate against rotation with respect to the base plate, a horizontal idler roller extending between the side walls and journalled in bearings, a horizontal drive roller extending between and supported in said side walls, said drive roller having a sprocket gear secured to one end thereof, a rotary pneumatic motor mounted on a side wall and having a sprocket forming a part



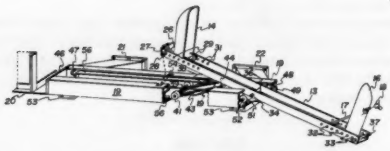
thereof, a drive chain trained over said sprockets, a ramp detachably mounted on pins on the side walls by means of slots formed in side edges of the ramp, a vertical socket mounted on each flange, and each socket having a set screw threaded therein, a tubular frame including a pair of legs respectively engaging in the sockets, sleeves vertically slidably mounted on the legs and clamped in position thereon, posts secured to said sleeve, a horizontally adjustable shaft mounted in one of said sleeves and said shaft having bores for selectively receiving a pin, a yoke secured to the shaft and having a vertically arranged roller journalled therein, and said last named rollers being arranged in spaced parallel relation and being adjustable to the sleeves.

3,843,001

RAMP LOADING MOTORCYCLE CARRIER RACK

Howard R. Willis, 2710 Fairmount Ave., San Diego, Calif. 92105

Filed June 14, 1972, Ser. No. 262,577
Int. Cl. B60n *9/10*
U.S. Cl. 214—450 **3 Claims**



1. A carrier and loading device for motorcycles including an elongated base portion with means for attachment across the rear end of a motor vehicle and wherein the improvement comprises:

elongated tiltable means carried on said base portion including means enabling movement of said tiltable means longitudinally along said elongated base portion and rotation about a horizontal, transverse axis with respect to said elongated base portion, said elongated tiltable means serving as a carrier when disposed horizontally and serving as a ramp means when inclined,

said elongated tiltable means including a rotation stop member, and including means for receiving the wheels of a motorcycle,

said tiltable means being rotatable about said axis which is substantially centered along the length of said tiltable means,

said base portion including means for preventing rotation of said tiltable means except when said tiltable means is laterally displaced,

said means for preventing rotation comprises a horizontal flange on said base portion engaging said rotation stop member on said tiltable means,

said horizontal flange having an opening sized to pass said stop member and positioned to be aligned with said stop member when said tiltable means is moved out of alignment with the rear end of said vehicle,

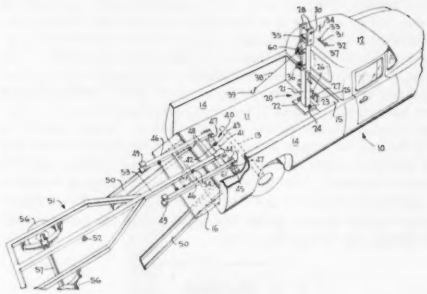
whereby a motorcycle may be rolled onto said inclined ramp means, tilted to a horizontal orientation, and slid into alignment with the rear end of a motor vehicle.

3,843,002

BOAT AND TRAILER LOADING DEVICE

Carl O. Pihlgren, Box 4, Wadsworth, Nev. 89442

Filed July 11, 1972, Ser. No. 270,685
Int. Cl. B60r *9/08*
U.S. Cl. 214—450 **4 Claims**



1. An apparatus for mounting a boat trailer, which carries a boat thereon, on the rear bed of a truck comprising:

a post member rigidly mounted to said rear bed having at the top thereof two spaced apart plates defining a space therebetween, each plate having a transverse aperture therein,

a roller mounted between said plates below said apertures, a locking pin movable through said apertures,

a pair of spaced rod members,

pivotal mounting means for pivotally mounting said rod members to said rear bed,

reinforcing rod means for interconnecting said rod members,

U-shaped portions mounted on said rod members for engaging said boat trailer,

a winch means mounted on said post member having a cable wound thereon,

said boat trailer including an elongated central support bar having a depending means located substantially midway along said support bar for engaging said winch means, and

a transverse hole located in said support bar spaced from said depending means,

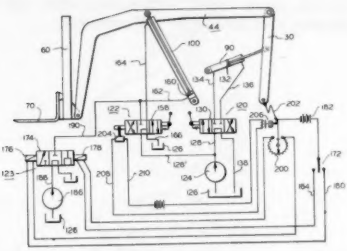
said winch means being operative to wind said cable to pull said support bar into said space and over said roller so that said transverse hole and said apertures are aligned and further to swing said rod members from a first position substantially parallel to said rear bed to a second position substantially perpendicular to said rear bed, and said locking pin being engageable through said apertures and said transverse hole to lock said trailer onto said truck.

3,843,003

EXTENDED REACH MECHANISM FOR A TRUCK

Gary D. Frank, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed July 7, 1972, Ser. No. 269,855
Int. Cl. E02f 3/86
U.S. Cl. 214—762 **10 Claims**



1. An extended reach mechanism for a lift truck having a frame with a forward end and a rearward end, comprising a substantially vertical post pivotally connected at its lower end to the rearward end of the truck frame, a boom pivotally connected to the upper end of said post and extending toward the forward end of the truck frame, a load attachment at the forward end of said boom, a first power means connected to said post for pivoting said post forwardly and rearwardly for extending and retracting said boom, a control means for said first power means, a second power means spaced forwardly from said post and being extensible and retractable for pivoting said boom upwardly and downwardly to raise and lower a load on said attachment, a first control means for controlling said second power means, a second control means operated electrically for said second power means, and an electrical means responsive automatically to the pivoting movement of said post for actuating said second control means to extend or retract said second power means to maintain the forward and rearward movement of the forward end said boom on a substantially constant horizontal plane for any given elevation of said forward end.

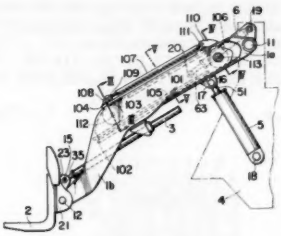
3,843,004

LOADING TOOL CONTROL APPARATUS FOR LOADING VEHICLES

Osamu Kambe, Osaka, Japan, assignor to Toyo Umpanki Co., Ltd., Osaka, Japan

Filed July 20, 1973, Ser. No. 381,135
Int. Cl. B66f 9/00
U.S. Cl. 214—763 **5 Claims**

1. A loading tool control apparatus for use with a loading vehicle, said apparatus comprising: a lift arm having its front end hinged to a lower portion at the rear of the loading tool and its rear end hinged to a main body of the loading vehicle for swinging thereabout to raise and lower the loading tool; a tilting cylinder mechanism having its one end attached to a center portion of said lift arm by means of a holding member and the other hinged to an upper rear portion of the loading tool, said tilting cylinder mechanism including a cylinder, front and rear pistons slidably accommodated in said cylinder for defining front, intermediate and rear cylinder chambers, and front and rear piston rods respectively secured to said front and rear pistons, the foremost end of said front piston rod forming the one end of said tilting cylinder mechanism and the rear end of said cylinder forming the other end of said tilting cylinder mechanism for controlling tilt of said loading tool; a boom cylinder mechanism having its one end hinged to the main body of the loading vehicle and the other hinged to that portion of said lift arm which is positioned close to the main body of the loading vehicle, for raising and lowering said lift arm; a level cylinder mechanism having its one end hinged to the main body of the loading vehicle and the other hinged to a central portion of said lift arm and extendible and contractible in response to rise and fall of said lift arm; an oil pump for supplying oil to said tilting, boom and level cylinder mechanisms; an oil reservoir in fluid communication with said oil pump; and an oil pressure change-over valve assembly interposed between said tilting and level cylinder mechanisms



and said oil pump and oil reservoir and formed with first and second oil ports, the front cylinder chamber of said tilting cylinder mechanism and a front cylinder chamber of said level cylinder mechanism being in fluid communication with each other by way of an oil conduit and with the first oil port of said oil pressure change-over valve assembly, the intermediate cylinder chamber of said tilting cylinder mechanism being in fluid communication with the second oil port of said oil pressure change-over valve assembly by way of an oil conduit, the rear cylinder chamber of said level cylinder mechanism and the rear cylinder chamber of said tilting cylinder mechanism being in fluid communication with each other by way of an oil conduit, and the front and rear pistons and the front and rear piston rods of said tilting cylinder mechanism being concurrently brought into sliding movement by contact therebetween in the cylinder of said tilting cylinder mechanism in response to the extension and the contraction of said level cylinder mechanism. whereby the loading tool is maintained horizontal during the raising and lowering of said lift arm.

3,843,005

BLOWN PLASTIC CONTAINER

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 11, 1972, Ser. No. 225,449
Int. Cl. B65d 1/02, 1/40, 1/42
U.S. Cl. 215—1 C **5 Claims**

1. In a blown plastic container having a finish and integral side walls, the improvement of an integral pressure bottom support configuration including an arcuate bottom wall integral with said side walls, an outwardly flaring peripheral skirt integral with said bottom wall, and a second outwardly flaring peripheral skirt integral with said side wall and encompassing the skirt of said bottom wall, said skirts being joined integrally to one another at their bottom extremities to form a support

edge for said container and skirts being integrally and continuously heat sealed to one another adjacent said support edge to

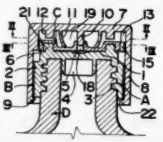
define a multiple thickness support wall, said side walls, said bottom wall and both of said skirts having the same thermal history.

3,843,006

SAFETY BOTTLE CAP

Hisao Naito, Osaka; Kiyoshi Nakabayashi, Kawanishi, and Terumi Matsuda, Hyogo, all of Japan, assignors to Takeda Chemical Industries Ltd., Osaka, Japan

Filed Dec. 18, 1972, Ser. No. 315,829
Claims priority, application Japan, Dec. 25, 1971, 46-2399
Int. Cl. B65d *43/02*
U.S. Cl. 215—9 **6 Claims**



1. A safety bottle cap comprising a screw cap having a tubular body topped by a roof and threaded internally with threads for engaging detachably with the external threads of the bottle neck of a bottle, a ratchet secured on the roof of the screw cap, and having flexible ratchet teeth in its outer periphery engaging in the threading direction of the screw cap, and fitting portions in its upper surface, and an outer cover which covers the screw cap with the ratchet, and has at its bottom an inwardly turned rim which latches onto the bottom of the screw cap, toothed portions at the upper part of the inside thereof which engage the ratchet teeth of the ratchet in the threading direction of the screw cap, and on lower surface on the roof of which are provided fitting portions and a flexible spacer element or elements extending downward in sliding contact with the upper surface of the ratchet during its rotation, the outer cover being normally held raised by the elastic force of the spacer elements so as to keep the fitting portions of the outer cover disengaged from the fitting portions of the ratchet, but, the former being able to engage with the latter when the outer cover is pressed down against the elastic force of the spacer elements.

3,843,007

COMBINATION LOCK SAFETY CAP

Karl A. Meyer, 171 N. Atlantic Ave.; Apt. 27, Cocoa Beach, Fla. 32931

Filed July 5, 1973, Ser. No. 376,900
Int. Cl. A61j *1/00*
U.S. Cl. 215—206 **10 Claims**

1. A container closure structure and container used in conjunction therewith, comprising:

a container for receiving a given quantity of material to be restricted from use by small children;

a neck portion formed on said container to function as an access opening for filling said container and for removing said material therethrough;

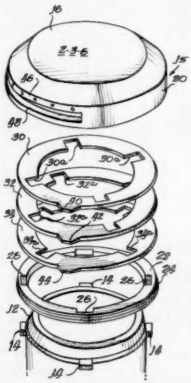
radially outwardly directed tab means formed about the exterior periphery of said neck portion;

a closure assembly fashioned firmly to fit said neck portion to seal the container and prevent said material from being removed from said container, said closure assembly including;

a cap to fit over said neck portion and form a seal about the mouth of said neck portion;

an integral peripheral depending flange portion associated with said cap, said integral peripheral depending flange portion having a dimension and configuration freely to fit over said radially outwardly directed tab means of said neck portion;

a retainer means formed about the inner peripheral portion of said integral peripheral depending flange portion, said retainer means extending inwardly a distance to underly said tab means of said neck portion when said closure assembly is in position on said container;



first notch means formed on said retaining means, said first notch means being sized and configurated to accept said tab means when said closure assembly is positioned over said neck portion;

locking means associated with said closure assembly, said locking means being movably secured between said cap and said retaining means;

second notch means formed in said locking means, said second notch means being sized and configurated to accept tab means when said closure assembly is positioned over said neck portion; and

positioning means associated with said locking means to enable manual relative movement of said locking means with respect to said retaining means and said cap means, to allow alignment of said first and second notch means of said retaining means and said locking means, respectively, for easy application and removal of said closure assembly from said neck portion, whereby misalignment of said first and second notch means prevents inadvertent removal of said closure assembly from said neck portion.

3,843,008

SAFETY CLOSURES FOR CONTAINERS

Alfred S. Colella, West Covina, Calif., assignor to J. Carroll Baisch, Whittier, Calif., a part interest

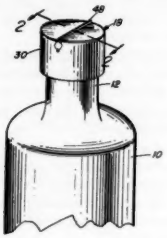
Filed May 24, 1973, Ser. No. 363,753
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—215 **6 Claims**

1. A safety closure for containers comprising:

a closure member with threadable attachment to a threaded part of a container;

a safety cover means disposed over said closure member to protect said closure member from being inadvertently unscrewed from a container to which it is attached, said safety cover means normally being rotatable relative to said closure member;

a closure member comprising an inner cap and the safety cover means comprising an outer cap having an inside diameter somewhat greater than the outside diameter of the inner cap, each cap comprising a cylindrical skirt part, and an end wall part at one end of the skirt part, the other end of the cylindrical skirt part being open, the inner cap having internal threads for reception on the external threads on a part of a container, the end wall part of the closure member having at least one external diametrically extending groove;



means for rotatably retaining the outer cap on the inner cap;

the end wall part of the safety cover means having an opening extending diametrically therethrough, and oppositely arranged diametrical slots extending from the opening to the respective outer and inner sides of the end wall of the safety cover means;

and a key having the same cross-sectional shape as the opening through the end wall of the outer cap, and a flange extending outwardly from one side of the key and longitudinally of said key, said key being slidable in said opening in the end wall of the outer cap with the flange thereof in one of the slots, said flange being disposed in the inner slot and groove in the end wall of the inner cap when said caps are oriented so that the inner slot registers with the groove of the inner cap.

ERRATUM

For Class 215—228 see:
Patent No. 3,842,790

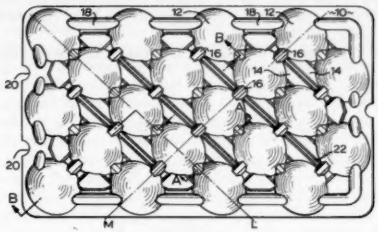
3,843,009

SHALLOW PACKING TRAY

Roy W. Emery, 1 Donino Ct., Toronto, Ontario, Canada

Filed June 25, 1973, Ser. No. 373,168
Int. Cl. B65d *25/02, 81/00, 85/00*
U.S. Cl. 217—26.5 **11 Claims**

1. A molded packing tray having a plurality of downwardly dished article receiving pockets, disposed in rows and having a pitch center axis extending diagonally of said tray, each pocket being shortened and dished with a relatively steep curvature in a first horizontal direction and being elongated and dished with substantially less curvature in a second horizontal direction transverse to said first horizontal direction, the said first horizontal direction having an angle of inclination in the range of 0° to 10° to said pitch center axis of said tray.

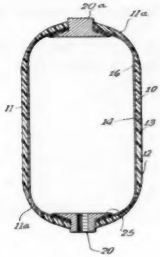


3,843,010

METAL LINED PRESSURE VESSEL

William George Morse, and Thomas Edward Timberlake, both of Lincoln, Nebr., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 13, 1971, Ser. No. 188,862
Int. Cl. F25j
U.S. Cl. 220—3 **9 Claims**



1. A pressure vessel comprising:

1. a composite structural housing defined by a metal inner liner substantially surrounded by a resin impregnated filament formed reinforcing layer, the housing having a polar end and an opening therein;
2. a boss having a flange portion mounted within the housing at the polar end opening adjacent a portion of the inner liner;
3. means providing a resilient low modulus interface biasable seal between the flange portion and the inner liner portion;
4. said seal permitting relative movement between the housing and the boss while maintaining the seal.

3,843,011

CONTAINER WITH ATTACHED CLOSURE

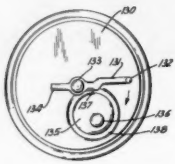
Walter Merton Perry, 76 Locust Hill Rd., Darien, Conn. 06820

Filed Mar. 2, 1972, Ser. No. 231,124
Int. Cl. B65d *17/00, 43/02*
U.S. Cl. 220—47 **13 Claims**

1. An improved container top made of ductile metal material and having an easy opening means therein, in which said means comprises a downwardly hingeable integral segment cut from said top to form an opening, and with said segment positioned just below said container top to bridge said opening, and with said opening smaller than said segment, and with

frangible sealing means between said segment and said top to resist internal pressure in said container and make said container top airtight, and in which said segment remains attached to said container top by an uncut section of the periphery of said segment after said segment has been pushed in to open said container.

the improvement comprising, a swing locking arm rotatably



mounted on an integral rivet formed from the material of said segment, and with said arm arranged to rotate so one end extends into locking position with said container top to prevent downward movement of said segment, and such that said arm can be rotated away from contact with said container top when said segment is to be pushed inwardly to open said container.

3,843,012

EASY OPEN CAN END/AND HINGED OPENING TAB

Omar L. Brown, Kettering, Ohio, assignor to Ermal Co. Fraze, Dayton, Ohio

Filed Sept. 1, 1972, Ser. No. 285,745
Int. Cl. B65d *17/20*
U.S. Cl. 220—269 **24 Claims**

1. An easy open can end construction comprising:

a tear portion circumscribed by a primary line of weakness;

a tab having a body including a nose portion, a lifting end and a support strip;

said support strip connected to the tear portion by a front connection positioned adjacent the tab nose and a rearward connection positioned between the front connection and the lifting end.

said front and rearward connections lying on about the centerline of the tab with the nose portion of the tab positioned in rupturing proximity to said line of weakness; said support strip defined by a slit in the tab body, with the slit beginning at a point adjacent the front connection, extending rearwardly around the rearward connection and then extending forwardly to end at a point adjacent the front connection with the ending point spaced transversely from the beginning point of the slit and with the beginning and end portions of said slit including tear retarding portions;

the beginning and ending of said slit positioned with respect to said front connection to define a tab bend line which lies rearward of the front connection when the lifting end of the tab is raised to rupture the line of weakness through contact with the tab nose, and

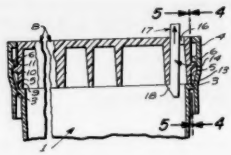
said rearward connection providing support for said front connection through said support strip during rupturing of the line of weakness.

3,843,013

METER BOX

Frank M. Brooks, Jr., San Marino, Calif., assignor to Brooks Products Inc., El Monte, Calif.

Filed Apr. 2, 1973, Ser. No. 347,128
Int. Cl. B65d *45/00*
U.S. Cl. 220—55 K **3 Claims**



1. A meter box, comprising:

a. a meter box member having an open upper end bordered by an outwardly extending horizontal ledge terminating in an upwardly extending rim, the rim having opposed portions, and a keeper rib on the inner surface of each of said opposed portions;

b. a cover member of resilient material including a downwardly extending peripheral flange resting on the ledge and confronting the upwardly extending rim, the flange at one end of the cover including a flexible portion confronting one of said keeper ribs and capable of deflection away from the rib;

c. a first latch boss at the end opposite from the flexible portion engageable with the corresponding keeper rib and disengageable therefrom upon pivotal movement of the cover about an axis coinciding with first latch boss;

d. a second latch boss carried by the flexible portion of the cover flange, the second latch boss having sloping cam surfaces engageable with the corresponding keeper rib to deflect the flexible portion for camming over the corresponding keeper rib upon forcibly pivoting the cover member in either direction about said axis; and

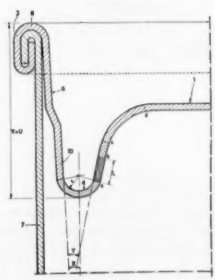
e. tool engageable means with said cover adjacent said second latch boss for forcible pivoting of said cover to open position.

3,843,014

CONTAINER COVER

Jean Cospen, Cachan, and Jean Schiavi, Paris, both of France, assignors to Pechiney Ugine Kuhlmann, Paris, France

Filed Mar. 16, 1973, Ser. No. 342,270
Int. Cl. B65d *7/42*
U.S. Cl. 220—66 **4 Claims**



1. A cover for a container whose contents are under pressure comprising a substantially flat central portion, said central portion including a removable panel, a crimping flange portion, a peripheral neck having a radius of curvature within the range of 0.5 to 1.2 mm, a substantially rectilinear portion

of continued section without break in continuity integral with and connecting the neck with the central portion, a portion integral with and connecting the crimping flange portion and the neck, with the portion connecting the crimping flange portion with the neck forming an angle X with a line perpendicular to the plane surface of the neck at most 20° and forming with the rectilinear portion an angle Y within the range of up to 34°, said angles x and Y being selected in such a manner that for a high value of X the value of Y will be as low as possible and vice versa.

3,843,015

SCREW CAP FOR CONTAINERS

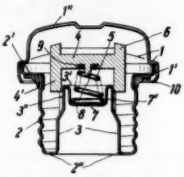
Werner Blau, and Theo Gerdes, both of Langenfeld/Rheinland, Germany, assignors to Blau KG Fabrik Fuer Kraftfahrzeugteile, Langenfeld, Germany

Filed Jan. 26, 1973, Ser. No. 327,096

Claims priority, application Germany, Jan. 28, 1972, 2204088

Int. Cl. B65d *41/04*

U.S. Cl. 220—288 **5 Claims**



1. A screw cap for containers, comprising a cap part and a threaded part, said cap part being mounted on and rotatable with respect to said threaded part, said cap part having a pressed-out hand grip arranged thereacross, means for coupling together said cap part and said threaded part comprising a bridge part, bearing limbs provided on said bridge part and spring means biasing said bridge part, said threaded part including grooves therein for guiding said bearing limbs, said spring means being located between said bridge part and said threaded part and urging said bridge part against said cap part and acting in such a manner that, on reaching a predetermined tightening torque of said threaded part in a thread, automatic decoupling of said parts occurs thereby preventing excessive tightening of said threaded part.

3,843,016

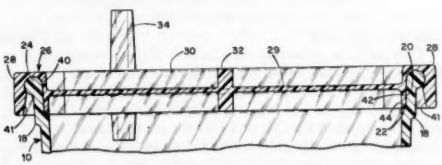
DISPOSABLE ASPIRATOR

Walter J. Bornhorst, Acton, and Steven J. Coleman, Billerica, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Aug. 4, 1972, Ser. No. 278,054

Int. Cl. B65d *41/18, 47/06;* **A61m** *1/00*

U.S. Cl. 220—306 **9 Claims**



1. A vacuum operated fluid collection container comprising in combination a receptacle and a unitary mating lid; said receptacle comprising adjacent its open end an abutment extending substantially normal to the receptacle sidewall from the inner surface thereof, wall means extending approximately orthogonally from said abutment; said mating lid comprising peripheral sealing ring means defining a wall complimentary to said receptacle wall means for surface-to-surface contact therewith when said lid is operatively mounted upon said receptacle, a lid abutment at the inner end of said lid wall for engaging said receptacle abutment when said lid is operatively installed upon said receptacle and vacuum applied thereto to prevent said lid from being drawn down into said receptacle, a plurality of stiffening ribs extending inwardly from said sealing ring means, a diaphragm passing through said ribs and intersecting said sealing ring means along a plane substantially parallel to the plane of said lid abutment whereby, when said lid is operatively mounted upon said receptacle and vacuum is applied to said container, said abutments are drawn into firm engagement and said diaphragm deflects downwardly to press said lid wall into sealing engagement with said receptacle wall means.

3,843,017

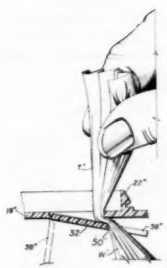
DISPENSING TREATED TOWELETTES

Thomas S. Harrison, New Canaan, Conn., assignor to Sterling Drug Inc., New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,784

Int. Cl. B65h *1/00*

U.S. Cl. 221—63 **15 Claims**



1. A dispenser for a web of perforated tissue-like material comprising a container including a wall, an opening in the wall, said opening including a fixed edge portion, means within the container normally substantially closing said opening, the web passing through the opening between the edge portion and the closing means, the edge portion and the closing means applying friction to the web to apply tension to the web as it is pulled from the container, the tension causing the web to separate at the perforations leaving a leading tip exposed exteriorly of the container,

said edge portion overlying the closing means and preventing motion of the latter past the edge portion, said closing means being movable to uncover the opening, providing for easy initiation of the passage of the web therethrough.

3,843,018

PNEUMATIC METERING DEVICE

Robert G. Holmes, Cary, and Roger P. Rohrbach, Raleigh, both of N.C., assignors to Research Corporation, New York, N.Y.

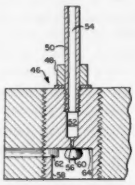
Filed June 26, 1970, Ser. No. 50,186

Int. Cl. B65g *47/14*

U.S. Cl. 221—211 **6 Claims**

1. Apparatus for metering discrete particulate materials in a one by one successive fashion comprising, wall means defining a materials conveying cavity; means for directing a low volume, high velocity gas stream to said cavity, means for

moving said wall means in a sequential manner through a zone of the particulate material wherein one of said particles is picked up by and retained in the cavity by the gas stream, and then to a discharge zone, and means for overcoming the retaining power of the gas stream to release said cavity-retained



particle from the cavity at the discharge zone, wherein the means for releasing said cavity retained particle comprises directing a second gas stream into the cavity substantially at right angles to the first named gas stream when the cavity is at the discharge zone.

3,843,019

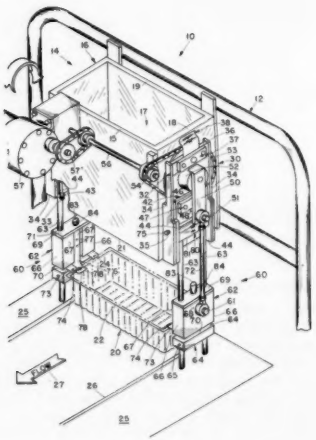
DENESTING APPARATUS

Roger L. Medendorp, Grand Rapids, Mich., assignor to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.

Filed Aug. 21, 1972, Ser. No. 282,326

Int. Cl. B65h *5/00*

U.S. Cl. 221—225 **24 Claims**



1. An apparatus for sequentially removing an article from a stack of articles and for controlling its motion to a location remote from the stack comprising:

retainer means for retaining a plurality of stacked articles in a predetermined orientation;

separating means for selectively separating an end article from said stack of articles;

movable holding means positioned adjacent said separating means and movable between article holding and article releasing positions for selectively holding and releasing a separated end article;

a pair of carriage means positioned on opposite sides of said retaining means and movable between said retainer means and a predetermined location remote therefrom;

gripping means coupled to each of said carriage means and movable therewith for alternately gripping and releasing opposite sides of a separated article; and

means coupling said carriage means to said separating and holding means to synchronize the movement of said gripping means with said separating and holding means.

3,843,020

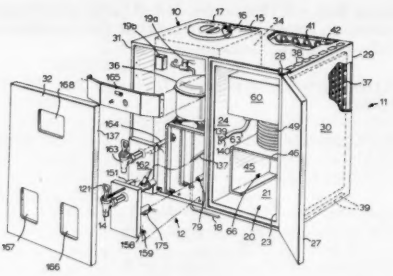
AUTOMATIC LIQUID DISPENSING APPARATUS

William Milton Bardeau, Unit 33, Four Winds Dr., Downsview, Ontario, Canada, and Frank Welty, Youngstown, Ohio, assignors to said Bardeau, by said Welty

Filed Aug. 16, 1973, Ser. No. 388,948

Int. Cl. B67d *5/08*

U.S. Cl. 222—58 **23 Claims**



1. In apparatus for dispensing a liquid derived from two liquid components to be stored within the apparatus and to be delivered separately from their sources through a conduit system to confluence downstream before discharge, the combination of a first stationary vessel for storing one liquid component, a base resilient support means upstanding from said base in spaced relation to said stationary vessel for supporting a selected applied load above said base in the form of a displaceable vessel adapted to contain a measured quantity of a second liquid component, said resilient support means being extensible, substantially vertically in response to an increment of change in the weight of a selected applied load and calibrated in relation to such load that the liquid level established upon initial loading of said resilient support means is substantially maintained as the load is diminished, a first conduit section terminating downstream in a discharge orifice and adapted for connection upstream with one of said liquid sources, and a second conduit section adapted for connection upstream to the other of said liquid sources and terminating downstream in an orifice defining a flow path intersecting with the flow path defined by said discharge orifice of said first conduit section.

3,843,021

DISPOSABLE RESERVOIR PACKAGE FOR LIQUID-DISPENSER HAVING FLOAT-OPERATED VALVE

Warren J. Schieser, Columbus, Ohio, assignor to Corco Inc., Worthington, Ohio

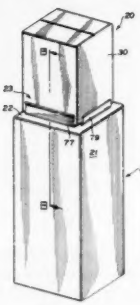
Filed Oct. 2, 1972, Ser. No. 294,271

Int. Cl. B65d *35/56*

U.S. Cl. 222—105 **6 Claims**

1. A package assembly for use as a disposable reservoir in a liquid dispensing unit comprising an outer protective box and an inner flexible bag disposed within and protected by the outer box, said box having a substantially flat wall adapted to rest on a support surface when in dispensing position on the dispensing unit with the bag filled with liquid, said bag having a neck which is adjacent said flat wall with the bag filled, a valve member on the neck for controlling discharge of liquid through said neck in cooperation with a valve seat on the neck, said valve member comprising a stem slidably mounted on the neck for axial movement between seated and unseated positions relative to said seat, said valve stem extending axially

outwardly of the neck, said substantially flat box wall having an opening through which the valve stem and neck can project, means for locking the neck in said opening in a position such that the axis of the slidable valve stem will be substantially normal to the flat wall and the neck will be locked in fixed axial position, said valve member seating on said valve seat when moved axially inwardly but dropping downwardly by gravity when the box with the filled bag is resting on said flat wall in dispensing position with the valve stem projecting below the flat wall, said means for locking the neck in said opening comprising a locking panel at said flat wall having a keyhole slot at said opening, said neck having a radially outwardly opening locking groove on its exterior, said keyhole slot having a wide portion through which the neck can pass axially and a communicating narrow portion into which the



neck can be moved laterally to lock it axially at said locking groove, said locking panel being part of an adapter which is adapted to support the box on the support surface of the dispensing unit which is substantially horizontally disposed, said panel of the adapter having a flat surface providing said flat support surface on which the flat wall of the box rests, said panel having said keyhole slot formed therein, and locating means extending from said flat support surface of said panel for locating the flat wall of the box on said flat support surface of the panel to locate said opening in said box wall in cooperation with said keyhole slot in said adapter panel.

3,843,022

DISPENSING DEVICE FOR HEATED FLUENT PRODUCTS

Remington Radcliffe, and Meyric K. Rogers, both of Lancaster, Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed July 20, 1973, Ser. No. 381,048
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HA **7 Claims**

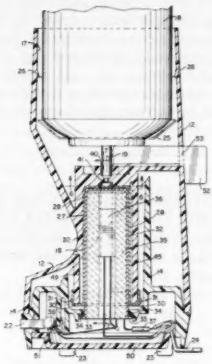
1. A dispensing device for dispensing a heated fluid product from a container having a discharge nozzle at one end, said device comprising, in combination:

a base portion comprising a heating probe and a base for supporting said heating probe in a vertical upstanding position;

a body portion comprising a housing having top, bottom and side faces, means for receiving said product container on said top face, a dispensing port for delivering said product to a user on said side face, and a recess on said bottom face for slidably receiving said heating probe to render said body portion removable from said base portion;

and

means comprising a plurality of communicating channels, at least two of which extend longitudinally along the inside surface of said probe-receiving recess, and a heat-conductive sleeve inserted into said probe-receiving recess over said channels for forming passageways for conveying said product from said container to said discharge



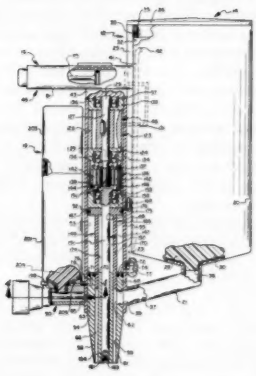
nozzle in close proximity to said probe whereby said product is heated prior to being discharged.

3,843,023

MIXING AND DISPENSING APPARATUS HAVING NOZZEL CLEANER

David H. Vroom, 4550 N. Flowing Wells Rd., Lot 225, Tucson, Ariz. 85705

Filed Sept. 17, 1973, Ser. No. 398,000
Int. Cl. B67d *5/54*
U.S. Cl. 222—136 **12 Claims**



1. A mixing and dispensing apparatus adapted to hold, mix, and dispense first and second materials therefrom, comprising:

a. a first housing means having a first material therein,

b. a second housing means having a second material therein,

c. a material control means having a mixing chamber operably connected to said first housing means and said second housing means to receive the first and second materials therein for mixing purposes,

d. said material control means having an actuation control means connected to said first housing means and said second housing means to selectively force the first and second materials into said mixing chamber, and;

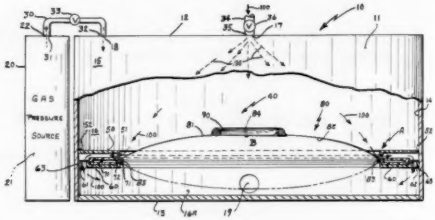
e. said material control means including a control housing having a mixer and wiper means therein extended within said mixing chamber, said actuator control means operably connected to said mixer and wiper means; operable under one set of conditions to force the first and second materials into said mixing chamber for thorough agitation into a mixed material combination and operable under a second set of conditions to cease movement of the first and second materials and to seal said mixing chamber from air and to remove therefrom the mixed material combination.

3,843,024

LIQUID EXPULSION SUBSYSTEM HAVING ORIENTATION RESPONSIVE PUMP

Hartley E. Barber, Sylmar, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 26, 1972, Ser. No. 301,029
Int. Cl. B67d *47/34*
U.S. Cl. 222—207 **3 Claims**



1. A liquid expulsion subsystem, comprising:

a. a tank made of liquid-impervious material, for containing a liquid which is to be expelled from said tank, wherein said tank includes a top surface, a bottom surface, and an internal surface, and with said tank having therein an upper portion and a lower portion, and also with said tank having a first closeable inlet to permit the inflow of the liquid into the tank, a second inlet, and an outlet to permit the outflow of the liquid from the tank, with said outlet located in the said lower portion of the tank;

b. a source of gas under high pressure, with said surface having an outlet;

c. a first hollow conduit having two ends, with one end connected to the outlet of said source of gas under high pressure, and with the other end connected to the second inlet of said tank;

d. valving means, disposed between the outlet of said source of gas under high pressure and the second inlet of said tank, and connected to said first hollow conduit, for controlling the flow of the gas from said gas source, through said first hollow conduit, and into said tank;

e. and, a liquid expulsion assembly, positioned within the said lower portion of said tank and above said outlet of said tank, comprising:

1. a lip seal ring having a periphery, with said periphery abutting with, and sealingly attached by suitable means to, the internal surface of said tank;

2. a perforated ring having a periphery and positioned below of, and essentially parallel to, said lip seal ring, with said periphery abutting with, and sealingly attached by suitable means to, the internal surface of said tank;

3. a seal ring, smaller in size than said perforated ring, and having an inner peripheral surface, with said seal ring disposed between said perforated ring and said lip seal ring, and with said seal ring abutting with, and attached to, said perforated ring;

4. a flexible diaphragm having an upper surface, a lower surface, a periphery, and a centrally located opening, with said periphery abutting with, and attached by suitable means to, the inner peripheral surface of said seal ring;

5. and, a float ring attached to the upper surface of said diaphragm and surrounding said central opening of said diaphragm.

3,843,025

METHOD OF PREPARING PLASTIC CONTAINERS

William G. Holt, Raynham, Mass., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 22, 1973, Ser. No. 372,576
Int. Cl. B65d *35/10*
U.S. Cl. 222—207 **3 Claims**

1. A blow molded thermoplastic container comprising integral bottom, top and side walls, and an elongated fluid transfer member embedded in a vertical position in a side wall, said member including an elongated vertical flat portion having a pair of substantially parallel elongated ridges projecting therefrom toward said side wall, said ridges being spaced apart and positioned in abutting relationship to said side wall to form an enclosed vertical passageway, the top of said passageway being in communication with the exterior environment, the bottoms of each ridge being enlarged and flared inwardly toward the side wall and having an arched portion interconnecting the ridges to define an enlarged tapered inlet chamber, the side wall of said container extending at least partially into the inlet chamber and having an opening therein whereby the interior of the container is in communication with the vertical passageway.

3,843,026

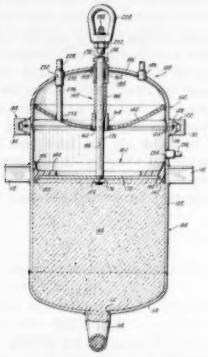
PRESSURIZED MORTAR POT APPARATUS

Frank V. Giovannozzi, Tulsa, Okla., assignor to Stacker System, Inc., Tulsa, Okla.

Filed Feb. 14, 1973, Ser. No. 332,483
Int. Cl. B62d *5/54*
U.S. Cl. 222—389 **10 Claims**

1. Apparatus for applying mortar, comprising: a pressure vessel adapted to receive a charge of mortar; a piston reciprocally mounted within said pressure vessel, said piston being mounted on one end of a piston rod, the other end of said piston rod being slidingly engaged within a housing carried by said pressure vessel, and extending through the exterior wall of said pressure vessel, said piston rod having an axial bleed passage extending therethrough for bleeding trapped gas from between the front face of said piston and said mortar charge; means for selectively closing the outer end of said bleed passage; an annular gasket mounted on the periphery of said piston, said gasket being in sliding engagement with the wall

of said pressure vessel, and including an upstanding peripheral lip portion on the rear side of said piston adapted to form a pressure seal with the said pressure vessel when the region behind said piston is pressurized, and a depending lip portion on the front side of said piston adapted to engage the wall of said pressure vessel and wipe mortar therefrom as said piston advances whereby to provide a clean surface for said upstanding peripheral lip portion to slide upon; means for supplying gas pressure to the region behind said piston within said pressure vessel whereby to force said piston toward said mortar charge; and discharge means on said pressure vessel in front of said piston, and adapted to receive mortar forced therethrough by movement of said piston toward said mortar charge.



3,843,027

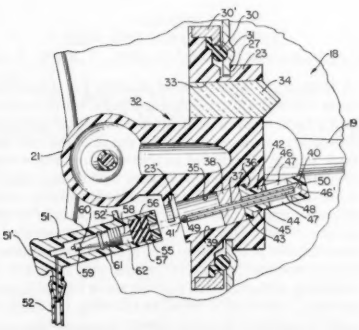
FLUID DISPENSING CONTAINER CONSTRUCTION

Calvin L. Wilson, and John H. Fox, Jr., both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 213,433, Dec. 29, 1971. This application July 16, 1973, Ser. No. 379,906

Int. Cl. B67d *1/06*

U.S. Cl. 222—400.7 **10 Claims**



1. A fluid dispensing container comprising; a container body having a chamber therein for storing said fluid, a dispensing unit for dispensing said fluid from said chamber to the exterior of said container body; said dispensing unit having a plate and a bore in said plate; and means for permitting an external charging source to charge said chamber with a propellant to provide a dispensing force for said fluid in said chamber, said means comprising a retainer fixed in said bore, said retainer having a cylindrical inside surface defining a longitudinal opening therethrough, a needle-like tubular member extending through said longitudinal opening and being carried by said retainer, said needle-like tubular member having an outside surface sealed against said cylindrical inside surface, said needle-like tubular member having an outer projecting part arranged outwardly of said retainer and having a passage therein provided with an inlet externally located relative to said container body and said retainer with said outer projecting part of the needle-like tubular member and said inlet being in a protected position within said bore, and said needle-like tubular member having an outlet located in said chamber, said container body having an encasing one-way check valve disposed within said chamber and about said outlet to separate said outlet from said chamber.

3,843,028

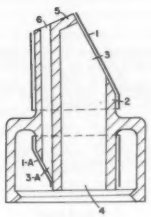
CONTAINER CLOSURES

James Lee Whitehead, 1336 South G St., Elwood, Ind. 46036

Filed Feb. 13, 1973, Ser. No. 332,202

Int. Cl. B65d *5/72*

U.S. Cl. 222—494 **2 Claims**

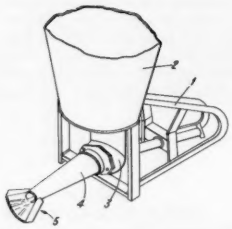


1. A self sealing cap adapted to connection to squeeze type containers, comprised of an assembly of three parts, said parts being a substantially rigid cap body, having a generally cylindrical surface shape, hollow and open at both ends, said cap having an upper face, one opening being inclined at an angle to a longitudinal axis, the plane of said opening extending from a point on the cylindrical surface to the upper face, bisecting this face, said opening being substantially of a rounded triangle shape, the upper face of the cap body being at an angle to the plain of this opening, said cap body having a vent tube as an integral part of it, said vent tube being a passage from the outside of said cap, with an inner inclined opening into the interior of the container, positioned substantially parallel to the longitudinal axis of said cap body; an elastic diaphragm sleeve of the same general cylindrical configuration as said cap body, said diaphragm sleeve is adapted to fit over the cap body in such a manner as to cover the inclined opening, sealing it; and an inner diaphragm sleeve adapted to fit over said inner inclined opening, said assembly utilizing the pressure transmitted through the contents of the container, when said container is squeezed, to cause the diaphragm sleeve to open, said diaphragm sleeve utilizing its own natural resiliency to resume its normal shape, resealing said inclined opening, this being its normal shape in this assembly, the inner diaphragm sleeve utilizing the partial vacumm caused by the intended discharge of a portion of the contents of said container to open, venting the interior of the container to the atmosphere, and the natural resiliency of the inner diaphragm sleeve to reseal the inner inclined opening, this being its normal shape in this assembly.

3,843,029
SPREADING SPOUT FOR FERTILIZER SPREADING MACHINES OF THE SWINGING TUBE TYPE

Carlo Bezzecchi, 3, Via dei Tigli, Campagnola, Italy (42012)

Filed July 23, 1973, Ser. No. 381,663
Claims priority, application Italy, Aug. 9, 1972, 46906/72
Int. Cl. A01c 15/00
U.S. Cl. 222—533 5 Claims

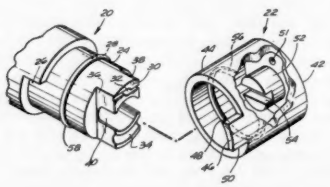


1. In a particle spreader comprising a hopper, an outlet duct for said hopper mounted for swinging motion in a substantially horizontal plane, and a spreading spout fixed to the outlet end of said outlet duct, the improvement according to which said spout fans outwardly from said duct in a substantially horizontal direction and is provided with a bottom which is concave as seen from above and rims at the sides of said bottom and at the end thereof remote from said duct, which rims slope upward at an angle to said bottom.

3,843,030
MULTIPLE PURPOSE NOZZLE

Lewis A. Micallef, New York, N.Y., assignor to Leeds and Micallef, New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 278,997
Int. Cl. B05b 1/12
U.S. Cl. 222—554 10 Claims

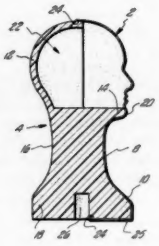


1. A multiple purpose nozzle comprising a tubular member having a bore therethrough and through which material to be dispensed is adapted to pass, an adjustable cap associated with the tubular member and adapted to assume a first position at which it seals off the bore to prevent the material from being dispensed, the cap adapted to assume at least one other position at which the material to be dispensed is adapted to pass in a selected predetermined discharge pattern, the cap including a discharge orifice that is radially offset in relation to the axis of the bore of the tubular member and surfaces of the tubular member and cap define a passageway from the bore to the orifice when the cap is in the other position, the tubular member having an end wall, and the cap having an outer flat closed wall having the discharge orifice and a tubular skirt disposed around the end wall, the end wall of the tubular member and the flat closed wall of the cap cooperating to form between them a laterally extending portion of said passageway when the cap is in the other position, the end wall including a cavity of predetermined configuration at the other position which cooperates with the orifice in producing the selected discharge pattern, the cap including a boss extending from the flat wall inwardly within and coaxial with the skirt and being disposed within the bore of the tubular member, the boss having a slot in its free end and the end wall of the tubular member having at least one peripheral slot communicating with the bore and the cavity, said slot in the cap boss communicating with the bore and the peripheral slot in defining the passageway when the cap is in the other position, the boss being adapted to close off the bore and its communication with the peripheral slot when in the first position, and coupling means for associating the cap with the tubular member whereby the cap may be shifted between the first and other position.

3,843,031
MANNEQUIN HEAD

Donald Sungjik Oh, 7208 Exeter St., and Jung Kun Park, 7229½ Exeter St., both of Paramount, Calif. 90723

Filed May 20, 1974, Ser. No. 471,332
Int. Cl. D06c 15/00
U.S. Cl. 223—66 10 Claims



1. A mannequin human head suitable for displaying wigs and other wearing apparel designed to be worn on or around a person's neck or head, said mannequin head comprising:

a foundation member having the shape of the rear half of a skull, a chin, a neck and an upper torso portion adjoining the base of said neck, said rear half of said skull being formed with walls defining an interior cavity, said chin, neck and upper torso being substantially solid to have the weight of said foundation member concentrated at the base thereof provided by said upper torso portion; and

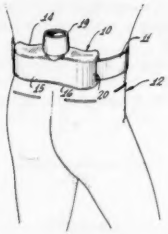
a frontal member having the shape of a face and further including a frontal neck portion and a frontal upper torso portion, said frontal member covering the front half of said foundation member when mounted thereon, said frontal member including a base portion extending beneath the front of the bottommost surface of said foundation member, the interior surface of said chin, frontal neck and upper torso portions of said frontal member conforming to the configuration of the surface of said foundation member that is covered thereby when said frontal member is mounted on said foundation member.

3,843,032

CANTEEN

Richard L. Moran, 5826 Tujunga, Apt. 4, North Hollywood, Calif. 91601, and Carl O. Swenson, 22376 Algunas Rd., Woodland Hills, Calif. 91364

Filed Sept. 13, 1972, Ser. No. 288,511
Int. Cl. A45f 3/16
U.S. Cl. 224—5 W 4 Claims



1. In a canteen for support across the back of a wearer in the region of the waist line;

a molded canteen body to extend horizontally across the back of the wearer, generally above the waist line, said canteen body including an inner side wall to confront the wearer's back, said inner side wall being provided at its extremities with end area portions shaped and spaced to engage and fit the wearer's back at two points spanning approximately two-thirds to three-quarters the width of the wearer's back, said side wall being contoured between its said end area portions to clear the wearer's back, said body including also

end walls joining and forming corners at opposite ends of said inner side walls, and walls forming a top, a bottom, and a rearward side wall,

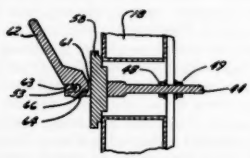
belt tunnels integrally molded in said canteen body for a body-encircling belt at said corners, said tunnels opening inwardly through said inner side wall adjacent to said end area portions of said inner side walls and outwardly through said end walls, the stretch of belt between said tunnels being adapted to be tautened across and in contact with the back of the wearer, and there being clearance space between the so-tautened belt and the portion of said inner side wall between said tunnel openings.

3,843,033

TIRE AND WHEEL CARRIER

Robert A. Wirth, Sr., 905 - 13th Ave., Nebraska City, Nebr. 68410

Filed June 12, 1973, Ser. No. 369,269
Int. Cl. B62d 43/08
U.S. Cl. 224—42.24 6 Claims



1. A carrier for mounting a wheel having an axial opening therethrough and a tire mounted thereon which carrier is mounted in the rack of a pick-up truck having a sidewall and a floor, the carrier comprising:

base means securable to the floor;

upright means adjustably secured at one end to said base means and having a horizontally disposed slot formed therethrough;

a top element secured to said upright means other end and securable to the sidewall;

a shaft adjustably secured to said upright means and having a free end projecting outwardly therefrom, said shaft having a threaded end disposed through said slot and a pair of nuts threadably mounted on said threaded end with said nuts disposed on opposite sides of said upright means for securing said shaft thereto;

a bifurcated arm secured to said shaft free end and projecting outwardly therefrom and having a pair of bifurcations; a pin interconnecting said bifurcations;

an offset bar removably mounted between said bifurcations and having a pair of opposed bosses projecting outwardly thereof thus permitting said offset bar to be positioned between said bifurcations with each boss disposed on one of said bifurcations; and

a cam lever pivotally mounted on said pin and coactable with said offset bar;

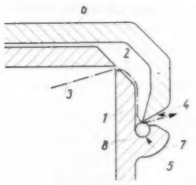
wherein one side of the wheel and tire are mountable against said upright means with said shaft projecting through the axial opening in the wheel and said offset bar being disposed against the other side of the wheel thus securely holding the tire and wheel to said upright means when rotation of said cam lever causes said offset bar to move toward said shaft threaded end.

3,843,034

DEVICE FOR SEVERING A PREFERABLY MOISTENED TISSUE WEB

Klaus Lewandowsky, Bietigheim, Germany, assignor to Dr. Kurt Walker, Stuttgart, Germany

Filed Jan. 31, 1973, Ser. No. 328,265
Claims priority, application Germany, Jan. 31, 1972, 2209191; Feb. 26, 1972, 2204402
Int. Cl. B26f 3/02
U.S. Cl. 225—43 29 Claims



1. Dispensing arrangement for preferably moistened tissue web comprising:

container means for housing a supply of tissue web,

a dispensing slot in said container means for accomodated withdrawal of said web out of said container means,

and a clamping mechanism spaced from said slot and including means for severing the web into individual sheets after the web has been withdrawn through said slot,

said clamping mechanism including a blade member disposed at one side of said web and a contact member disposed at the other side of said web,

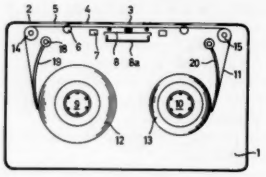
said contact member including means for enhancing the severance of the tissue web by said blade member,

said means for enhancing the severance of the tissue web including relatively resilient material portions in said contact member, said resilient portions accommodating inward engagement of said blade member to assure penetration of said blade member through said web.

3,843,035
GUIDE ELEMENT FOR MAGNETIC TAPES

Horst Fitterer, Heidelberg; Karl Uhl, Frankenthal; Friedrich Guenther, Willstaett; Kurt Scmidts, Kehl, and Dieter Gaiser, Diersheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Jan. 18, 1973, Ser. No. 324,675
Int. Cl. B65h *23/08*
U.S. Cl. 226—195 **8 Claims**

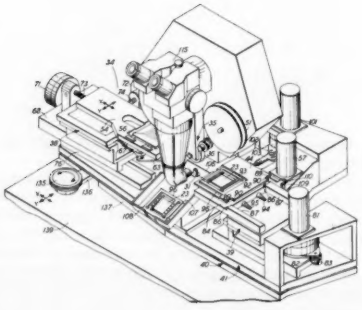


1. A tape guide element for winding tape on or off a tape pack in magnetic tape cartridges, said element being of non-magnetizable material and having a guide surface for the back of the turn of tape approaching or leaving the tape pack, said guide surface exhibiting a surface roughness with a center line average value R_a of at least 0.28μ to about 3.15μ.

3,843,036
APPARATUS FOR BONDING A BEAM-LEAD DEVICE TO A SUBSTRATE

Jack J. Monahan, Allentown, and Fred J. Scheider, Catasauqua, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 188,272, Oct. 12, 1971, Pat. No. 3,793,710. This application Oct. 4, 1973, Ser. No. 403,588
Int. Cl. B23k *1/00*
U.S. Cl. 228—6 **13 Claims**



1. An apparatus for bonding a semiconductor device to a predetermined area of a substrate, which comprises:

a bonding station including, a bonding tip positioned on and movable along a bonding axis, and a bonding support located in normally spaced relation to the bonding tip in alignment with the bonding axis;

means for feeding a semiconductor device into alignment with the bonding axis;

means for locating a substrate with a predetermined area thereof in alignment with the bonding axis;

means for transferring the device from the feeding means to the bonding tip;

means for transferring the substrate from the locating means to the bonding support;

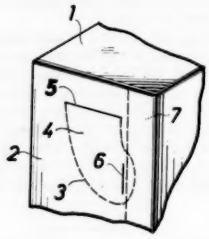
means for positioning the substrate locating means in a preload position away from the bonding station to allow access for loading a substrate for a subsequent bonding operation; and

means for effecting a bond between the semiconductor device and the substrate in alignment with the bonding axis while the locating means is in the preload position.

3,843,037
CARTON SPOUT

Rinnousuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Shinichi Araki, Tokyo; Shinzo Miyamoto, Soka, and Masao Ishii, Yachiyo, all of Japan, assignors to Lion Fiat and Oil Co., Ltd., Tokyo, Japan

Filed May 3, 1971, Ser. No. 139,777
Claims priority, application Japan, May 15, 1970, 45-48214; May 15, 1970, 45-48215; May 15, 1970, 45-48216; May 15, 1970, 45-48217
Int. Cl. B65d *5/74*
U.S. Cl. 229—7 R **1 Claim**

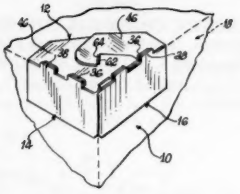


1. A structure of a dispensing spout built in a side wall of a carton, comprising: an attached plate stuck on the inside of said side wall; a dispensing spout flap being adapted to be opened and closed freely, and being defined by a perforation line which is formed on a predetermined region of said side wall, the tip of said flap overlapping said plate so that when the flap is opened the attached plate has an edge disposed within the opening defined by opening the flap, said flap consisting of first and second compressed score lines on the outside of said flap, said first compressed score line being formed at the base of said flap so that when said flap is opened and closed, the flap hinges about said first compressed score line, and said second compressed score line being formed on the outer surface of the tip of said flap and being positioned adjacent and generally parallel to said edge of said attached plate, said flap thereby being adapted to be folded along said second compressed score line solely in the outward direction by resistance of said attached plate and then forced into said carton, so that the tip of said flap is caused thereby to be held in contact with the inside of said attached plate, whereby said first compressed score line is formed substantially at right angles to said second compressed score line.

3,843,038
CORNER PROTECTOR CONSTRUCTION

Alan M. Sax, Schaumburg, Ill., assignor to Redi Container Corporation, Chicago, Ill.

Filed July 23, 1973, Ser. No. 381,986
Int. Cl. B65d *1/36, 3/24, 81/00*
U.S. Cl. 229—14 C **5 Claims**

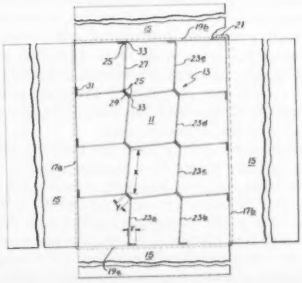


1. A blank for use in forming a construction used for protecting the exposed corners of objects during shipping and handling, said blank comprising a substantially rectangular corrugated sheet, a first foldline extending approximately along one centerline of the sheet, second, third and fourth foldlines extending parallel with the first foldline, said second, third and fourth foldlines all being located on one side of said first foldline, a fifth foldline extending parallel with said first foldline, said fifth foldline being located on the opposite side of said first foldline and a sixth foldline extending approximately along the centerline of the sheet and extending perpendicular to the other foldlines, said blank being foldable about said parallel foldlines to a configuration wherein the outer blank portion between said sixth foldline and an outer edge of the blank is positioned at 90° relative to the blank portion between said first foldline and said sixth foldline, and wherein the blank portion between said second and fourth foldlines is positioned in underlying relationship relative to said outer blank portions at an angle of 90° relative to the remaining blank portions on said one side of the first foldline, said outer portion being divided into two sections on opposite sides of said sixth foldline, and including locking tabs defined by said sections whereby the blank can be folded about said sixth foldline to bring said tabs into locking engagement.

3,843,039
CONTAINER PARTITIONS

Philip H. Brown, Zionsville, and Robert E. Reeves, Indianapolis, both of Ind., assignors to Inland Container Corporation, Indianapolis, Ind.

Filed June 14, 1972, Ser. No. 262,790
Int. Cl. B65d *5/48*
U.S. Cl. 229—28 R **8 Claims**

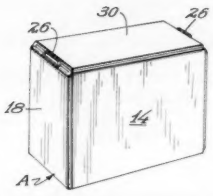


1. A collapsible box having four interconnected sidewalls, closure means, an interior cellular partition, said partition comprising a plurality of elongated strips, each of said strips having a hinged tab at each end, each of said strips having transverse lines of weakness at predetermined intervals to define main cell panels therebetween, said strips being folded alternately counter clockwise and clockwise along their length about said lines of weakness to position adjacent main cell panels of the same strip at substantially a right angle to one another, said strips being arranged to form a plurality of individual substantially rectangular cells, and means connecting said strips with said lines of weakness of one strip lying generally adjacent said lines of weakness of the next adjacent strip, and means attaching said end tabs to the interior surfaces of said interconnected sidewalls.

3,843,040
EASILY SET-UP CONTAINER

Frank W. Locke, Minneapolis, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Sept. 17, 1973, Ser. No. 398,214
Int. Cl. B65d *5/08*
U.S. Cl. 229—38 **3 Claims**



1. A container including: a generally rectangular bottom panel,

side walls hingedly secured thereto,

first end walls hingedly connected to one of said side walls, bottom closure flaps hingedly connected to said first end walls and folded over said bottom panel,

top closure flaps secured to the upper edges of said first end walls along fold lines,

said top closure flaps including elongated slots extending therethrough parallel to, and adjacent, said fold lines,

second end walls hingedly connected to the other of said side walls and foldable inwardly of said first end walls,

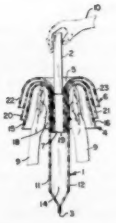
said second walls including tongues projecting upwardly from the upper edges thereof and extending through said slots, and

closure flaps hinged to the upper edges of said side walls and foldable into face contact between said tongues.

3,843,041
CASSETTE BAG

Maynard F. Oliverius, 4020 Sena Dr., Topeka, Kans. 66600

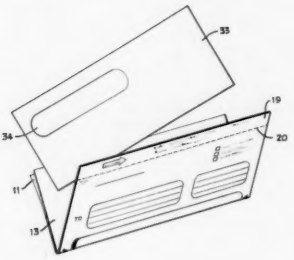
Filed Aug. 28, 1972, Ser. No. 284,412
Int. Cl. B65d *33/20*
U.S. Cl. 229—62 **5 Claims**



1. A sterile container adapted to receive a non-sterile article therein and comprising:

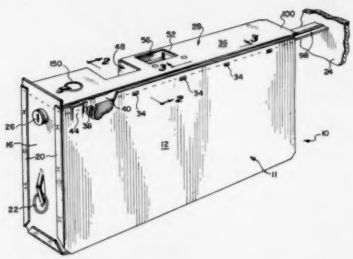
a. wall portions defining a container having a closed end and an open end:
b. a cuff portion on said container and in overlying relation with the wall portions adjacent the open end of said container;
c. an insert having wall portions defining a tubular member having one end thereof positioned within the open end of said container, said insert wall portions extending from within the container with outer portions overlying the cuff portion adjacent the open end of the container whereby the insert wall portions protect the container open end and cuff from contact with a non-sterile article moved through the insert and into the container; and
d. means on said container for releasably holding the one end of said insert in the open end of said container, said means being operative to seal the container whereby a non-sterile article moved through said insert and into said container may be sealed therein after separation of said insert from said container to thereby provide a sterile package of a non-sterile article which may be safely introduced into a sterile area.

3,843,042
MAILING DEVICE
David R. Mayne, Indianapolis, Ind., assignor to Datamation Communications, Inc., Indianapolis, Ind.
Filed Mar. 9, 1972, Ser. No. 233,270
Int. Cl. B65d *27/06*
U.S. Cl. 229—73 **11 Claims**



1. A mailing device comprising:
a packet originally including a first, second and third parallel paper sheet each having a top stub portion originally attached together with said second sheet originally disposed between said first and third sheet, said first sheet having a sender section and a receiver section, said second sheet being removed therefrom subsequent to information being written on said first sheet and transferred to said second and third sheet, said first sheet having first fold indicator for said first and third sheets to be folded thereat positioning said third sheet inward of said first sheet and said sender section and said receiver section on the same side of the fold;
a return envelope positionable inward of said first sheet subsequent to said second sheet being removed from said packet and with said first and third sheet being in a folded condition, said envelope having a first window in registry with said sender section when said stub portion of said first sheet is removed therefrom and said first sheet is removed from said third sheet and folded at said indicator and inserted in said envelope; and,
a sending envelope for containing said first and third sheet in said folded condition and said return envelope positioned inward of said first sheet, said sending envelope having a second and third window in registry respectively with said sender section and said receiver section when said first sheet and said third sheet are in said folded condition and inserted in said sending envelope;
said first sheet has a top edge spaced a fixed distance from said first fold indicator, said sending envelope has an interior length not less than said distance and approximately equal thereto preventing excessive lengthwise shift of said first sheet and movement of said sender section and receiver section with respect to said second window and said third window.

3,843,043
LOCKING COVER FOR COIN BOX
August M. Sciortino, 1838 Weeg Way, Park Ridge, Ill. 60068
Filed May 3, 1973, Ser. No. 357,002
Int. Cl. G07b *15/00*
U.S. Cl. 232—15 **14 Claims**



1. A coin box adapted to be introduced into a coin-operated vending machine having a receptacle for receiving the coin box, a back wall in the receptacle and a coin-accepting conduit leading to the top of said receptacle, said coin box comprising:
A. a boxlike body open at its top,
B. a cover locked in place to close the top and removable from the box body and including a top wall fully closing off the top from external access but for a window formed therein and located in a position which will vertically align with the coin-accepting conduit when the coin box is in installed condition in said receptacle,
C. a first slidable plunger mounted to the cover below the top wall and arranged to move between window obstructing and window uncovering positions between the ends of said cover,
D. a second slidable plunger mounted to the cover below the top wall arranged parallel with the first plunger and coupled thereto for reverse movement simultaneously therewith, and having an extension protruding to the rear of said cover,
E. spring means biasing the plungers so that the first moves forward to said window obstructing condition while the second moves rearward,
F. the cover having latching means accessible only from the bottom thereof including a first arm, a second arm and cooperating engaging structure on one plunger, the first arm being biased to move away from said cooperating engaging structure and the second arm being biased to move toward said cooperating structure, said engaging structure being movable with sliding of said one plunger to align with the respective arms,
G. the cover adapted to be locked to the body with the first arm previously having been manually moved against its bias to latch with said engaging structure, the plungers being manually forced to move against the spring-biasing means to align the engaging structure with the first arm while said first plunger is in window uncovering condition, the box adapted to be installed in the receptacle and the extension pressed against said back wall slightly to move the plungers and causing release of said first arm from said engaging structure but said back wall preventing substantial movement of said plungers, but upon removal of the box from the receptacle the extension and

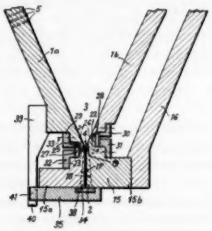
plungers being free to move whereby the first plunger will move forward to window obstructing condition and the second plunger will move to the rear, said one of said plungers moving the cooperating structure to align with the second arm whereupon said second arm automatically will latch therewith preventing any substantially movement of said plungers unless said second arm is manually unlatched.

3,843,044

CENTRIFUGE

Johann Peter Quetsch, Berghausen, Germany, assignor to Ernst Heinkel Maschinenbau KG, Karlsruhe, Germany

Filed Oct. 23, 1973, Ser. No. 408,918
Int. Cl. B04b 1/16
U.S. Cl. 233—20 R **14 Claims**



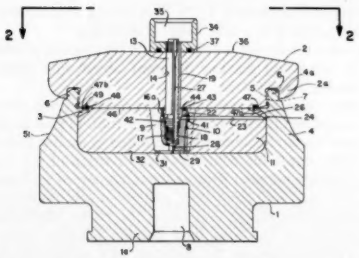
1. A continuously operating centrifuge for separating solids from liquids, comprising a centrifuge drum including two axially adjacent substantially conical drum sections having respective end portions of widest diameter which are located adjacent one another; a discharge control ring sealingly interposed between said end portions and provided with aperture means connecting the exterior of said drum with the interior thereof; drive means for rotating said drum sections at a first speed, and for rotating said control ring at a different second speed with reference to said drum sections; and closure means responsive to said first and second speeds for selectively opening and closing said aperture means to different extents.

3,843,045

CENTRIFUGE ROTOR

William L. Schmidt, Boulder, Colo., and Herschel E. Wright, Santa Clara, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 16, 1973, Ser. No. 351,364
Int. Cl. B04b 7/06
U.S. Cl. 233—27 **5 Claims**



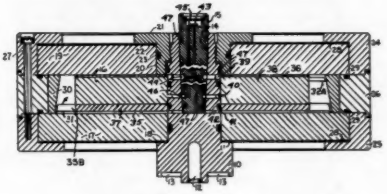
1. A rotor for a centrifuge apparatus comprising
a rotatable bowl having a base and a substantially cylindrical sidewall forming a chamber having an open side substantially coextensive with said cylindrical sidewall;
a cover for closing said open side of said chamber;
means for securing said cover to said sidewall of said rotatable bowl; and
a resilient lip attached to said sidewall and overhanging said chamber, said lip having an upper surface engaging the lower surface of said cover, said lip having sufficient resiliency to permit it to move and follow movement of said cover thereby maintaining sealing contact with said cover during centrifugation of liquid products within said chamber.

3,843,046

ROTORS AND ROTOR CORES FOR CONTINUOUS FLOW CENTRIFUGES

John E. Joyce, 22 Nelson Rd., Weymouth, Mass. 02190

Continuation-in-part of Ser. No. 129,055, March 29, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,673
Int. Cl. B04b 11/02
U.S. Cl. 233—32 **11 Claims**



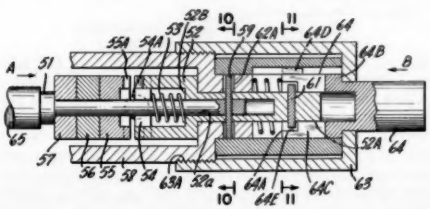
1. The method of particle separation that comprises the steps of forming in a centrifugal field a gradient layer substantially 360° in extent of uniform thickness throughout, holding said gradient layer captive in said field, providing said layer with closely spaced but positively separated leading and trailing ends, flowing a sample of a lesser density than the gradient into the field at said trailing end along the inner side of the gradient layer substantially as a concentric band and away from said gradient layer at said leading end, and establishing a relationship between the flow rate of the sample and the volume of its band such that at the leading end of the gradient layer the sample is substantially free of heavy particles with such heavy particles held in said gradient layer but separated therein in accordance with their density.

3,843,047

WRITING INSTRUMENT WITH COUNTER

Kouichi Otsuka, Chiba, and Yukio Fujimi, Narashino, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

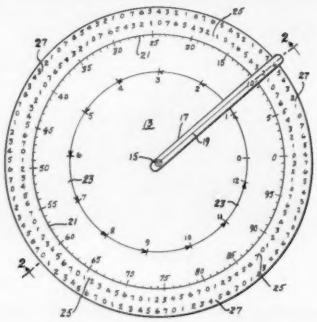
Filed Feb. 15, 1973, Ser. No. 332,763
Claims priority, application Japan, Feb. 16, 1972, 47-18413; July 7, 1972, 47-67522
Int. Cl. B43k 29/08
U.S. Cl. 235—64 **3 Claims**



1. A portable writing instrument comprising a casing, reciprocable means in said casing reciprocable therein in response

to each writing operation, sensing means to sense reciprocable movement of said reciprocable means, counter means in said casing actuated by said sensing means to count and indicate the reciprocable movements of said reciprocable means thereby to count said writing operations, and means for actuating said counter independently of said writing operations for counting therewith independently of said reciprocable means.

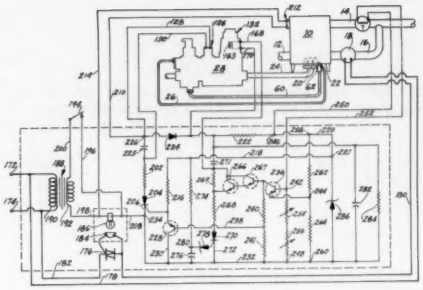
3,843,048
RULER DEVICE FOR DECIMAL-OCTAL CONVERSION
Kurt H. Haase, 148 Standish Rd., Watertown, Mass. 02172
Filed Nov. 5, 1973, Ser. No. 412,857
Int. Cl. G06g *1/02*
U.S. Cl. 235—84 **3 Claims**



1. A ruler device for decimal-octal conversion of numbers used in computer work comprising a flat disc having a central axis with a series of scales imprinted therearound, one of said scales being the main scale comprising a 360° circle divided into 100 parts, a first outer scale positioned outside said main scale and concentrically therewith, said first outer scale being marked in periodic repetition of 7 to represent the remainder in some selected cases, a second outer scale positioned outside said first outer scale and concentrically therewith, said second outer scale being marked in periodic repetition of 7 shifted in phase by 4 from said first outer scale to represent the remainder in other selected cases, and a pivotable radially disposed indicator arm mounted on said flat disc for rotation around the central axis thereof, said indicator arm having a radial index line passing through all of the scales imprinted on said disc such that reference to the proper outer scale will indicate the octal number corresponding to the decimal number on the main scale under the index line.

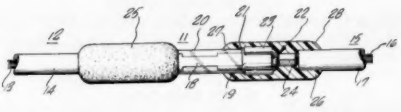
3,843,049
BURNER CONTROL SYSTEM
Robert L. Baysinger, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Dec. 13, 1973, Ser. No. 427,019
Int. Cl. F23n *1/08*; **G05d** *23/24*
U.S. Cl. 236—1 E **12 Claims**

1. In a control system for a gas-fired water heater, a burner, a flow control device comprising a biased closed, fluid pressure-opened main valve controlling the flow of gas to said burner, a biased closed auxiliary valve controlling the application of operating pressure acting to move said main valve openward, electromagnetic means including a winding operative when energized to open said auxiliary valve, a variably biased pressure regulator operative to vary the operating pressure in accordance with the bias thereon, and a biasing solenoid operative to variably bias said pressure regulator in accordance with the rate of current flow through its winding; an electrical power source, a temperature variable resistor responsive to the temperature of the water being heated connected across said power source, first amplifying means operative to amplify resistance change in said resistor, first circuit means including switching means responsive to an initial slight amplified resistance change in said resistor to connect said



electromagnetic winding across said power source, transistor amplifying means, second circuit means including the output of said transistor amplifier means connecting said solenoid winding across said power source, and means including the output of said first amplifying means operative to increase the forward bias of said transistor amplifier means with increasing change in the resistance of said resistor.

3,843,050
IN-LINE FUSE HOLDER
Simeon A. Melugin, Capistrano Beach, Calif., assignor to Lamcor Incorporated, Anaheim, Calif.
Filed Sept. 24, 1973, Ser. No. 400,259
Int. Cl. H01h *85/50*
U.S. Cl. 337—213 **15 Claims**



1. An in-line holder for a fuse having a conductive end portion coupled to a fuse body, comprising:

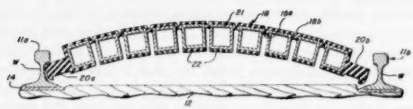
a conductor having an electrically conductive portion and an insulating portion disposed about said electrically conductive portion;

a conductive fuse end holder means electrically connected to said electrically conductive portion of said conductor, said fuse end holder means adapted to receive and electrically couple the conductive end portion of the fuse; and a flexible member disposed about a part of said insulating portion of said conductor, and about said conductive fuse end holder means and about the entire conductive end portion of the fuse, said flexible member forming an aperture allowing the insertion of a portion of the fuse including the conductive end portion, into electrical and mechanical contact with said fuse end holder means, said flexible member forming a resilient lip means which engages a rim at the junction of the conductive end portion and the fuse.

3,843,051
HIGHWAY RAILWAY CROSSING

Jacob Oscar Whitlock, 301 Cartwright Dr., Springfield, Ill. 62704

Filed June 15, 1973, Ser. No. 370,300
Int. Cl. E01b 2/00
U.S. Cl. 238—8 11 Claims

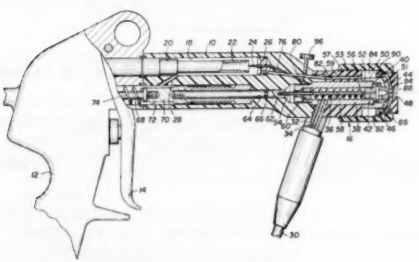


1. A highway railway crossing comprising a pair of spaced, substantially parallel rails; a plurality of elongated ties subtending and supporting said rails and being disposed transversely thereof; means for securing said rails to said ties; and an elongated unitary composite member overlying a plurality of said ties and spanning the distance between said rails and having a height substantially the same as that of said rails; said composite member including a one-piece upper lamina of resilient moisture-proof material having elongated compressible side edges recessed from the upper exposed surface of said lamina and in resilient sealing engagement with upright web portions of said rails, said lamina having the exposed upper surface thereof provided with a plurality of laterally spaced elongated drain grooves terminating at least at one edge of said lamina; a plurality of elongated reinforcing elements arranged in laterally spaced relation and affixed to the underside of said lamina, each element being disposed angularly of and overlying a plurality of said ties; resilient pad means affixed to the underside of each reinforcing element and in contact with a portion of a tie aligned therewith; and means securing said composite member to said ties.

3,843,052
PNEUMATICALLY ASSISTED HYDRAULIC SPRAY COATING APPARATUS

Philip L. Cowan, Morris Plains, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Continuation of Ser. No. 120,444, March 3, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,207
Int. Cl. B05b 5/00
U.S. Cl. 239—3 11 Claims

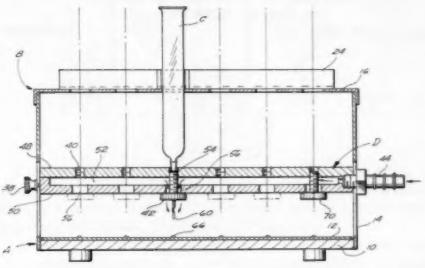


1. An apparatus for spray-coating an article comprising
a liquid atomizing head including a selectively shaped orifice for transforming coating liquid delivered thereto into a thin high velocity expanding coherent and essentially planar flattened fan shaped liquid film which is atomizable into a spray at its forward edge independent of interaction of high velocity air therewith,
means for delivering liquid to said selectively shaped orifice for said film forming emission there-through and
means for directing auxiliary gaseous jets into impinging relation against the essentially planar defining surfaces of said high velocity expanding coherent fan shaped liquid film to modify the locus of atomization thereof.

3,843,053
SPOTTER FOR USE IN THIN LAYER CHROMATOGRAPHY AND METHOD OF FORMING DROPS THEREWITH

John Thoden, Vineland, N.J., assignor to Kontes Glass Company, Vineland, N.J.

Filed Mar. 29, 1973, Ser. No. 345,975
Int. Cl. B05b 17/04
U.S. Cl. 239—11 14 Claims

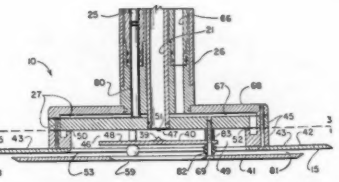


1. A spotter for use in thin layer chromatography for automatically spotting a solution containing a specimen to be analyzed onto a thin layer chromatographic plate comprising means for storing a selected amount of specimen-containing solution, means for forming a series of drops of the specimen-containing solution, said drop means being in fluid communication with said storage means and means external of said drop means for directing a flow of gas closely past the exterior of said drop means in the direction of drop movement therefrom, thereby causing said gas to affect said drops as they form, the rate at which the drops are formed by the drop means thus being dependent on the flow of said gas.

3,843,054
POWDER APPARATUS

Ronald R. Kendall, and Richard O. Probst, both of Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Continuation of Ser. No. 126,621, March 22, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,594
Int. Cl. B05b 5/02
U.S. Cl. 239—15 31 Claims



1. An apparatus for coating an article with particles of powder entrained in a gas including means having an orifice adapted to receive and project powder entrained in a gas, means spaced from the orifice and in the path of powder flow from the orifice for deflecting outwardly the powder projected from the orifice, a non-rotating surface adjacent the means for

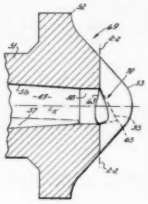
deflecting the powder, the deflected powder traveling across the surface, means adjacent the surface across which the powder is traveling allowing gas to be aspirated so as to provide an additional volume of gas to assist in conveying the powder outwardly from an extremity of the surface and to the article to be coated with sufficient momentum to carry substantially all of the powder to the vicinity of the article, and means providing a high voltage gradient at the extremity of the surface for charging powder adjacent the extremity.

3,843,055

SPRAY NOZZLE

Eric T. Nord; Alvin A. Rood, both of Oberlin, and Burton J. Vilagi, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed July 18, 1973, Ser. No. 380,385
Int. Cl. B05b *1/04*
U.S. Cl. 239—599 **36 Claims**



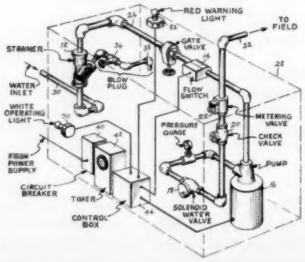
1. A spray nozzle for spraying a pattern with an uneven distribution of material throughout the pattern, said pattern having a site of maximum flow located a distance spaced from the middle of the pattern and having generally smooth gradations of flow from said site of maximum flow to the ends of the pattern, said nozzle comprising a body having a central axis, an approach passage and a domed blind end in the passage, said domed blind end of said passage being positioned asymmetrically relative to said central axis, said asymmetrically positioned domed blind end being intersected by a single slash cut through said nozzle body to define an orifice having cusped places of minimum opening at the ends thereof and a maximum opening located nearer to one of said ends than to the other end.

3,843,056

TRICKLE IRRIGATION SYSTEM

John R. Nye, 3574 Hollywood Rd., St. Joseph, Mich. 49085

Filed Nov. 30, 1973, Ser. No. 420,626
Int. Cl. A01g *25/02*
U.S. Cl. 239—64 **7 Claims**



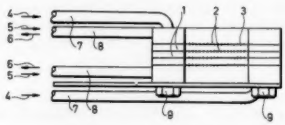
1. A trickle irrigation system comprising a water supply source, a field of water discharge means for dispensing water from said supply source over the ground, a pump including an electrical motor actuating means and having an outlet and an inlet, conduit means placing said inlet in flow communication with said supply source, conduit means placing said outlet in flow communication with said field, an electrical power source, a first switch connecting said power source to said motor actuating means and having an "on" position causing said motor actuating means to be activated and an "off" position causing said motor acuating means to be deactivated, a second switch connecting said power source to said motor actuating means and including means responsive to the rate of water flow through said pump for deactivating said motor actuating means with said first switch in its "on" position when said water flow drops below a selected rate, and means for deactivating said second switch when said first switch is first shifted into its "on" position until there is water flow through said pump from said water supply source.

3,843,057

CIRCULAR BURNER FOR THE VACUUM-TIGHT PINCHING OF LIGHT SOURCES HAVING QUARTZ TUBES

Lorinc Geiszler, deceased, late of Budapest, Hungary (by Henriette Geiszler, heiress); Tibor Simon, Goedalso; Mihaly Varga, and Agoston Tolnay, both of Budapest, all of Hungary, assignors to Egyesutt Izzolampa es Villamossagi Reszenytarsasag, Budapest, Hungary

Filed June 13, 1973, Ser. No. 369,721
Int. Cl. B05b *15/00, 1/06, 1/14*
U.S. Cl. 239—132.3 **6 Claims**



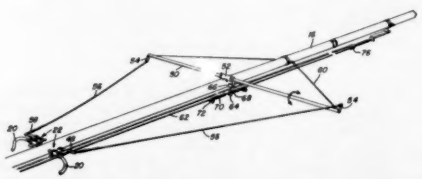
1. A circular burner for pinching quartz tube bulbs of light sources, comprising a burner body having an internal diameter 1. 2 to 1.6 times the diameter of the quartz tube to be pinched, cylinder jacket constituted by comb plates provided with outlet openings and placed between inlet rings, the jacket being equipped on both ends with cooling fluid circulating covering plates, the volume ratio of the mixing chamber of the burner to the outlet channels being in the range 1:8 to 1:16.

3,843,058

DIRECTION CONTROL SYSTEM WITH LEVER VALVE CONTROL

Walter J. Koinzan, Elgin, Nebr. 68636

Filed Aug. 30, 1973, Ser. No. 392,886
Int. Cl. B05b *3/02*
U.S. Cl. 239—177 **7 Claims**



1. For use in conjunction with water motor powered field irrigation equipment, a control system, said system comprising

a main water pipe, a pair of hoses extending from said pipe, a valve connecting each hose to the pipe and controlling the flow of water from the pipe to the hose, means for selectively simultaneously opening either valve and closing the other valve, said hoses being adapted for operative engagement with a water motor so as to, in response to the selective opening and closing of the valves, effect a selective driving of the water motor in either of two directions, said means for selectively opening and closing the valves including a valve lever fixed to each valve and movable in one direction to effect an opening of the corresponding valve, each valve lever being movable in a second direction to effect a closing of the associated valve, a reversing member movably mounted on the pipe, said reversing member, in a first position thereof, having a first valve cable connected thereto and extending therefrom to a first valve lever in a moved position opening the associated valve, and a second valve cable connected to the reversing member and extending therefrom to the second valve lever in a moved position closing the corresponding valve, said reversing member being movable between said first position and a second position wherein the first valve cable effects a valve closing movement of the corresponding lever and the second valve cable effects a valve opening movement of the corresponding lever.

3,843,059

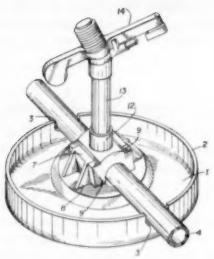
DEVICE FOR POSITIONING IRRIGATION PIPES AND ATTACHING RISERS THERETO

Yuval Segev, 27 Arlosoroff St., Hod Hasharon, Israel

Filed Aug. 9, 1973, Ser. No. 386,963

Int. Cl. B05b *3/02, 13/02, 15/06*

U.S. Cl. 239—273 **4 Claims**



1. A device for permanently positioning irrigation pipes, said device made of plastic material and comprising:

A. means for attaching a riser to the device,

B. a base plate having a peripheral rim including cut-outs in diametrically opposite positions for receiving an irrigation pipe,

C. a first half-shell clamp part integrally cast with the base plate in the center thereof, said first clamp part having longitudinal walls extending upwardly,

D. a second half-shell clamp part,

E. means on the second clamp part for engaging and locking the longitudinal walls of the first clamp part,

F. a connector member integrally connected with said second clamp part including means for attaching a riser thereto, and

G. said second clamp part having a bore extending at a right angle to the axis thereof, and constructed to communicate with said connector member and the irrigation pipe, wherein the irrigation pipe when laid in said cut-outs may be locked between the first and second clamp parts.

3,843,060

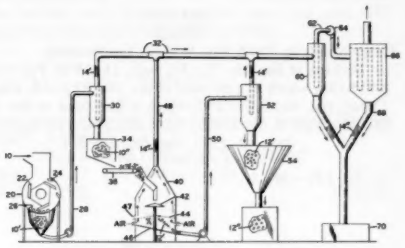
RECLAMATION OF FABRIC SUPPORTED THERMO-PLASTIC SHEET SCRAP

James R. Colburn, Columbus, Miss., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed June 20, 1973, Ser. No. 371,786

Int. Cl. B02c *19/12*

U.S. Cl. 241—24 **14 Claims**



1. A method of producing thermoplastic chips being of essentially fiber-free thermoplastic material from a sheet including a layer of thermoplastic material having a fabric backing attached thereto, the method comprising:

a. chopping the sheet into a first particulate mixture comprising respectively said thermoplastic chips, chopped fabric, lint and fly;

b. separating a major portion of said lint and fly from said first particulate mixture, leaving a second particulate mixture comprising primarily said thermoplastic chips and said chopped fabric;

c. separating substantially all of said chopped fabric from said thermoplastic chips by means of a moving stream of air; and

d. conveying said chopped fabric away from said thermoplastic chips, said thermoplastic chips being heavier and falling through said stream of air to be collected, thereby yielding a mass of said thermoplastic chips usable with and instead of virgin thermoplastic material.

3,843,061

APPARATUS FOR SEPARATING RUBBER FROM EMBEDDED REINFORCEMENTS

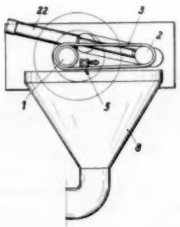
Paul Hammelmann, 474 Oelde/Westf., Zum Sundern 17, Germany

Filed Aug. 22, 1972, Ser. No. 282,627

Claims priority, application Germany, Aug. 27, 1971, 2142979

Int. Cl. B02c *19/00*

U.S. Cl. 241—38 **10 Claims**



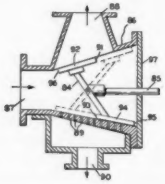
1. In an apparatus for separating rubber, particularly vehicle tire rubber, from embedded reinforcements, a combination comprising at least one nozzle for ejecting a spray of high-

pressure liquid against a workpiece; support means for supporting at least a portion of said workpiece opposite said nozzle during impingement of said portion by said spray so that the latter can effect separation of the rubber from the embedded reinforcements and at the same time reduce the rubber to rubber particles; collecting means for collecting the rubber particles; and moving means for effecting relative movement of said nozzle and support means.

3,843,062
PUMP

Georg Neidl, Im Bisch 664, Schaan, Liechtenstein

Division of Ser. No. 71,351, Sept. 11, 1970, Pat. No. 3,737,110, which is a division of Ser. No. 822,342, Feb. 18, 1969, Pat. No. 3,640,474, which is a division of Ser. No. 452,502, May 3, 1965, Pat. No. 3,502,274. This application Dec. 12, 1972, Ser. No. 314,331
Int. Cl. B02c *13/13*
U.S. Cl. 241—46.11 **8 Claims**

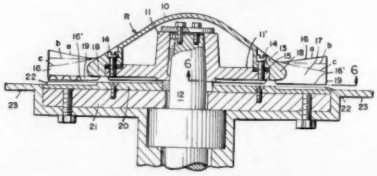


1. A pump and strainer assembly comprising a stationary pump housing formed by walls defining a pump chamber therein, an impeller rotating in said housing, a drive shaft for said impeller extending axially into said pump housing, said impeller being secured to said shaft for rotation in planes inclined to said shaft, a shell enclosing at least part of said pump housing said shell forming with the walls of said enclosed pump housing a separate chamber, strainer passages connecting said pump chamber and said separate chamber, an inlet for said pump chamber, and individual outlets each for said pump chamber and said separate chamber, said housing being conical and the inclined impeller being equipped at both ends with shoes sweeping along said conical inner periphery of the housing.

3,843,063
SHREDDING AND DEFIBERIZING MACHINE

Robert Blakeley Honeyman, Carmel, Calif., assignor to Morden Machines Company, Portland, Oreg.

Filed Feb. 6, 1973, Ser. No. 330,081
Int. Cl. B02c *13/16*
U.S. Cl. 241—46.11 **9 Claims**

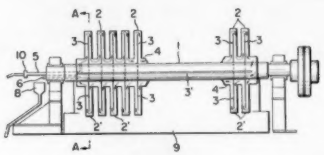


1. A machine for shredding and defiberizing paper-making material including a rotor, means for rotating said rotor about an axis, a stationary bedplate formed into a surface of revolution about said axis of rotation and defining a plurality of shear edges providing a generally planar defibering zone, a substantially dome-shaped hub on said rotor, a plurality of blades extending from said hub, each blade having a predetermined height and including a substantially flat forward work surface extending perpendicular to said bedplate and forming an oblique angle with a radius of said rotor away from the direction of rotation, the trailing surface of each blade further defining a concave downward slope along a portion thereof from the rear edge of top face for drawing material down into an intermediate location on the working face of a succeeding blade, the bottom faces of said blades extending in a surface parallel to and spaced slightly from said bedplate, and defining a plurality of bars each providing a straight shearing edge, said blades including a first set of blades of a first predetermined height spaced symmetrically about said axis of rotation and a second set of blades of a second predetermined height less than said first height and spaced symmetrically about said axis, the ratio of the number of blades in said second set to the number of blades in said first set being in the range of 2–4 to 1.

3,843,064
CRUSHER BLADES OF A SINTER DISCHARGE PART OF A SINTERING MACHINE

Masao Suzuki, Aichi-Ken, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,508
Claims priority, application Japan, July 12, 1971, 46-51067
Int. Cl. B02c *13/06, 13/26*
U.S. Cl. 241—67 **7 Claims**



1. In the sinter discharge part of a sintering machine comprising an axially elongated rotating shaft and crusher blades mounted on said shaft for rotation therewith for crushing sinters to a suitable grain size for feeding into a blast furnace, wherein the improvement comprises a case laterally enclosing said rotating shaft and secured thereon for rotation therewith, individual said blades attached to and extending outwardly from said case and spaced apart in the axial direction of said shaft, a cooling medium supply pipe connected to said case, a cooling medium exhaust pipe connected to said case, said case having at least one flow passage therethrough for the cooling medium, each said blade having a flow passage therethrough communicating with said at least one flow passage in said case for circulating the cooling medium in turn through said blades and case for maintaining said blades within a desired temperature range.

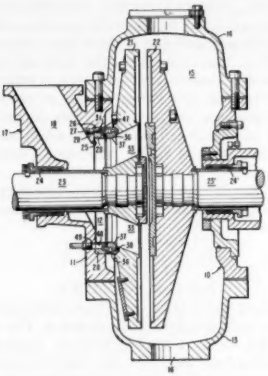
3,843,065
LABYRINTH SEAL RING FOR PULP REFINER

Anton J. Horstman, and William M. McNeil, both of Springfield, Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio

Filed Oct. 13, 1972, Ser. No. 297,177
Int. Cl. B02c *7/11*
U.S. Cl. 241—244 **8 Claims**

1. A disc refiner including a housing, a pair of relatively opposed refiner discs mounted for rotation within a chamber defined in said housing, one of said refiner discs including at least one feed passage for material to move between said discs to be refined thereby and discharged therefrom, said housing having means defining an inlet to said chamber and further

means defining an outlet therefrom, said means defining said inlet and said one disc including complementary ring means forming a flow channel for directing the material to be refined to move to and through said disc feed passage, one of said ring means forming an axial extension of the other, adjacent faces of said ring means being in a closely spaced relation, means providing a passage for directing fluid under pressure to move through one of said ring means and exit from one of said



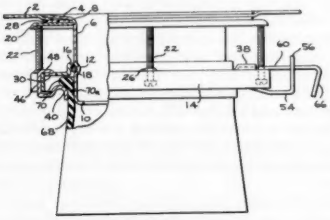
adjacent faces into the space between said faces to produce a fluid joint therebetween extending generally radially of said ring means, said fluid joint opening at one extremity to said flow channel and at the other extremity to said chamber, said passage through one of said ring means being directed to open to said joint intermediate its extremities at a location to provide that the fluid exiting therefrom under pressure will flow within said joint in respectively opposite directions to exert a blocking and cleansing influence in said joint.

3,843,066

WASTE DISPOSER APPARATUS

Lauren W. Guth, and Mahlon T. Roy, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 9, 1972, Ser. No. 305,090
Int. Cl. B02b *7/02*
U.S. Cl. 241—100.5 **2 Claims**



1. In a waste disposer apparatus of the type normally suspended beneath the drain opening of a sink:

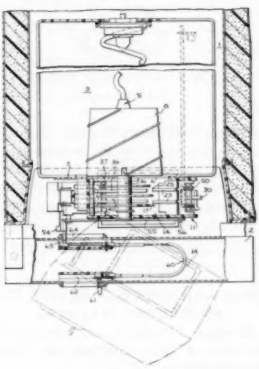
a. an annular support structure adapted to be securely fixed to the sink substantially in line with the drain opening, said annular support structure comprising:
   i. a first hinge member; and
   ii. a first locking means having a slot located therein;
b. a mounting ring arranged for cooperation with said annular support structure, said mounting ring comprising:
   i. a second hinge member engaging said first hinge member; and
   ii. a second locking means comprising a tab integral with said mounting ring, said tab having an aperture therein and cooperating with said first locking means; and
c. independent securing means including a finger extending through said aperture of said tab thereby forming a prying member for forcing said annular support structure and said mounting ring into assembled relationship and thereafter cooperating with said slot of said first locking means for holding said annular support structure and said mounting ring in assembled relationship.

3,843,067

ICE CRUSHER

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 9, 1973, Ser. No. 348,867
Int. Cl. B02c *13/06*
U.S. Cl. 241—190 **4 Claims**



1. An ice crusher comprising:

rotatable spaced crusher blades;

stationary anvil means in the path of said crusher blades including stationary spaced arms extending between adjacent crusher blades and spaced to provide coarse crushed ice;

anvil means including spaced arms having upper surfaces wider than said stationary arms and each being movable to an operative position below, adjacent, and extending along a respective stationary arm, said movable arms being spaced closer together than said stationary arms to provide finely crushed ice.

3,843,068

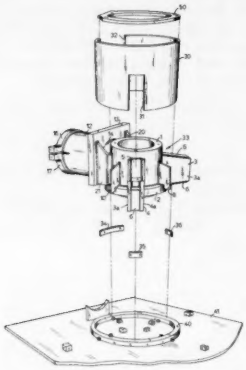
GYRATORY CRUSHER FRAME AND METHOD OF MAKING SAME

Frank M. Allen, Bayside; Ronald B. De Diemar, Brown Deer, and Kenneth C. Ehlert, Glendale, all of Wis., assignors to Barber - Greene Company, Aurora, Ill.

Filed Apr. 12, 1973, Ser. No. 350,508
Int. Cl. F16m *1/08*
U.S. Cl. 241—285 R **6 Claims**

1. A gyratory crusher main frame comprising, a tubular central hub, an adapter plate having a central opening therethrough; a tubular countershaft housing welded at one end to one side of said adapter plate and in alignment with said central opening, vertical arms welded between said hub and the other side of said adapter plate, tubular arms welded at their inner ends to said hub and extending therefrom, a tubu-

lar inner shell concentrically arranged around said hub and said arms and welded thereto, said arms protruding through and radially beyond said inner shell and terminating in free ends, said inner shell also being welded to said adapter plate to thereby form an annular space between said hub and inner



shell, a tubular outer shell arranged concentrically around said inner shell and having openings for receiving said free ends, said free ends being welded in their opening, and a base plate located at the lower edge of said tubular outer shell and welded thereto, said base plate also embracing and welded to said counter shaft housing.

3,843,069

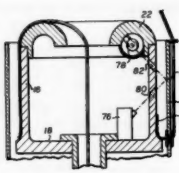
YARN FEEDING AND STORAGE DEVICE FOR TEXTILE PRODUCING MACHINE

Jose Castillo Deniega, Elmhurst, and Edward M. Tellerman, Woodmere, both of N.Y., assignors to Wesco Industries Corporation, Plainview, N.Y.

Division of Ser. No. 184,527, Sept. 28, 1971, Pat. No. 3,780,958. This application June 27, 1973, Ser. No. 374,250

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.12 **3 Claims**



1. A device for feeding yarn from a yarn package to a textile producing machine, comprising:

a. a frame adapted for securement to said machine,

b. a yarn storage member,

c. support means fixedly mounted on said frame means and having secured thereto said storage member with one of its ends proximate to said frame member and the other of its ends distal thereto, whereby said storage member is fixed against rotation relative to said frame member,

d. yarn winding means mounted for rotation on said support means between said frame member and said storage member, and having yarn guide means for winding said yarn about said storage member adjacent said one end thereof, for forming on said storage member a plurality of yarn windings which advance toward the other end of the storage member, said yarn being withdrawn from said yarn package in response to the rotation of said yarn winding means,

e. said winding means having sleeve means extending axially of said storage member and adapted to cover said yarn windings on said storage member, said yarn guide means being located at one end of said sleeve means,

f. means for detecting a predetermined quantity of yarn wound onto said storage member comprising a light source and a photocell mounted internally of said storage member, said drum being provided with a pair of apertures positioned relative to said light source and said photocell so that light emanating from said light source passes through one of said apertures, is reflected off the inner surface of said sleeve means, passes through the other of said apertures, and impinges on said photocell, whereby said photocell is energized when neither of said apertures is covered by the yarn wound onto the drum, and

h. control means responsive to said detecting means for controlling the rotation of said winding means.

3,843,070

PACKAGING COILS

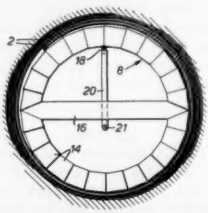
Geoffrey Ronald Reed, Ham, and Barry Edward Knox, New Addington, both of England, assignors to The British Iron and Steel Research Association, London, England

Filed Nov. 28, 1972, Ser. No. 310,148

Claims priority, application Great Britain, Dec. 10, 1971, 57501/71

Int. Cl. B65h *75/24*

U.S. Cl. 242—55 **6 Claims**



1. In a method of packaging an annular coil of sheet material having a plurality of laps defining a central eye, the steps of: inserting a radially expandable member into the central eye of the coil, inserting expandable locking means between said member and the central eye of the coil, radially expanding said member so that said locking means grips at least a part of the innermost lap of the coil, procuring relative rotation between said member and said locking means together with respect to the outer laps of the coil so as to tighten the inner laps of the coil and enlarge said central eye until the locking means expands to a locked condition within the central eye of the coil to retain said inner laps in that tightened condition, and removing said expandable member from the central eye of the coil.

3,843,071

STRIP MATERIAL CONTAINER AND DISPENSER

Tom L. Graham, Detroit, Mich., assignor to Tom L. Graham, Jr., Bellbrook, Ohio

Filed Jan. 2, 1973, Ser. No. 320,068

Int. Cl. B65d *65/672*; **B65h** *19/00*

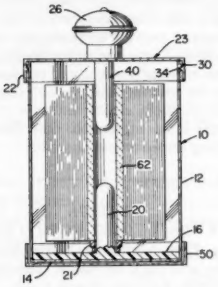
U.S. Cl. 242—55.53 **4 Claims**

1. A device for containing a roll of paper-like strip material and from which the strip material is dispensed, comprising:

an upright shell including vertical annular side walls and a floor at the bottom thereof, the side walls being provided with a portion having a vertically extending slot therein, a circular base within the shell and resting horizontally upon the floor, but unattached thereto and engaging the internal surface of the side walls to position the base within the shell,

a stem integral with the base at the central part thereof and extending vertically upwardly therefrom,

a removable circular cover member, the cover member having a horizontal portion having a lower surface resting upon the upper end of the shell and having a downwardly extending vertical annular flange encompassing the upper part of the shell,



a downwardly extending stem attached to the lower surface of the horizontal portion of the cover member at the central part thereof and being coaxial with the stem which is attached to the base,

a knob attached to the upper surface of the horizontal portion of the cover member for movement of the cover member from the shell for placing a roll of paper-like strip material into the shell and for re-positioning the cover member upon the shell, the roll of strip material encompassing the stem which is attached to the base and the stem which is attached to the cover member, a portion of the roll of strip material extending from the shell through the vertically extending slot in said portion of the side walls of the shell.

3,843,072

METHOD OF AND APPARATUS FOR COILING WIRE

Wilson Parker Rayfield, Levittown, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 331,448, Feb. 12, 1973,. This application Dec. 4, 1973, Ser. No. 418,691

Int. Cl. B21c *47/00*

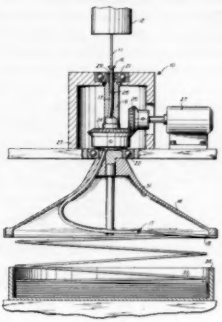
U.S. Cl. 242—82 **18 Claims**

1. Apparatus for continuously coiling wire having an initial axial velocity into a circular coil of predetermined radius, said apparatus comprising:

a. a laying tube having an inlet end adapted to receive the moving wire and an outlet end adapted to discharge the wire in the form of a circular coil;

b. means to rotate said laying tube about an axis of rotation aligned with the longitudinal axis of the laying tube through the inlet end thereof and in such direction that the outlet end of the laying tube trails the body of the laying tube;

c. the longitudinal axis of the laying tube through the outlet end thereof lying in a plane perpendicular to the axis of rotation of the laying tube and being tangent to a circle having its center lying on said axis of rotation and with radius equal to the distance between said axis of rotation and the longitudinal axis of the laying tube through the



outlet end thereof, the radius of said circle being equal to the radius of said circular coil.

3,843,073

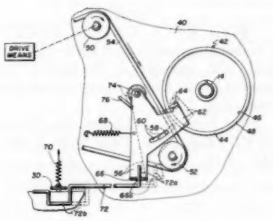
SPINDLE CONTROL MECHANISM

Donald Earl Day, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 25, 1973, Ser. No. 382,620

Int. Cl. G03b *1/00*

U.S. Cl. 242—204 **9 Claims**



1. A mechanism for selectively driving and braking a rotatable spindle of a web transporting apparatus, the mechanism comprising:

a. a cylindrical drum member operatively coupled to said spindle;

b. drive means including a pulley and a belt, said belt being movable into engagement with said drum member for rotatably driving said spindle;

c. brake means movable into engagement with said drum member for braking said spindle; and

d. means for supporting said pulley and said brake means for conjoint movement between (1) a first position wherein said pulley positions said belt into engagement with said drum member for driving said spindle, (2) a second position wherein said brake means restrains said spindle from rotating, and (3) a third position wherein said belt and said brake means are disengaged from said drum member.

3,843,074

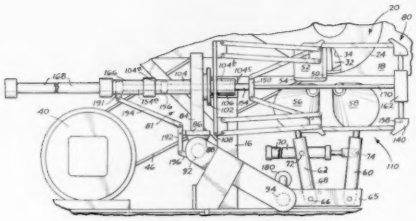
APPARATUS FOR PROCESSING TIRE CASINGS

Myron D. Tupper, Rt. 3, Box 158, Sandy, Oreg. 97055

Continuation of Ser. No. 202,967, Nov. 29, 1971, Pat. No. 3,731,884. This application May 7, 1973, Ser. No. 357,591

Int. Cl. B26d *1/28*

U.S. Cl. 241—222 **5 Claims**



1. In apparatus for preparing fragments from tire casings including clamp means for holding a tire casing by clamping onto the bead region of the casing, such clamp means being adjustable to conform to different diameters of bead regions in said casings,

tire casing confining means spaced radially of the axis of a tire casing held in said clamp means operable to confine a tire casing by bearing against opposite sides of a tire casing held by said clamp means,

means increasing and decreasing the spacing of said casing confining means relative to the axis of a tire casing held by said clamp means with adjustment of said clamp means to conform to larger and smaller diameters of said bead regions, respectively, and

means for cutting fragments from a tire casing confined by said confining means.

3,843,075

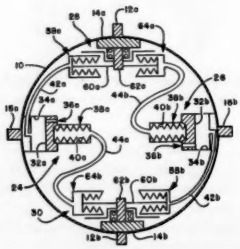
ROLL RATE CONTROL SYSTEM

T. Jerome Weber, Livermore, and Clifford T. Yokomizo, Dublin, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 11, 1973, Ser. No. 369,017

Int. Cl. F42b *15/16;* **F42g** *9/00;* **F42b** *15/02*

U.S. Cl. 244—3.15 **2 Claims**



1. A roll control system for an aerodynamics body having control fins extending therefrom comprising first and second rotatable means carried by said body at opposite ends of a diameter for rotatably supporting respective first and second of said fins for changing their orientation with respect to said body; actuator means for each of said fin supporting means, each actuator means including a housing having two chambers together with fluid responsive means for increasing the size of one of said chambers simultaneously with decreasing the size of the other chamber together with a mechanical means interconnecting said fluid responsive means and said fins for rotating said fins with said chamber size variation; fluid displacing means including first and second housings carried by said body, with each housing having a sensing mass dividing said housings into inward and outward portions and movable generally radially thereof in opposite directions inwardly and outwardly along a radius of said body in response to centrifugal force acting on said body for displacing fluid proportional to said centrifugal force from said inward and outward portions of said housings, and means for biasing said sensing masses to initial positions within said housings; coupling means including conduits for hydraulically interconnecting the outward portions of each of said fluid displacing means housings to a chamber of a separate one of the actuator means housing and the inward portion of each of said fluid displacing means housings to the other chambers of the opposite actuator housing means to provide an essentially constant-volume in each interconnected actuator means housing chamber, fluid displacing means housing portion, and conduit during sensing mass movement for rotating said first and second fins proportional to said fluid displacement and said centrifugal force; and an essentially noncompressible fluid filling each of said chambers, housing portions and conduits.

3,843,076

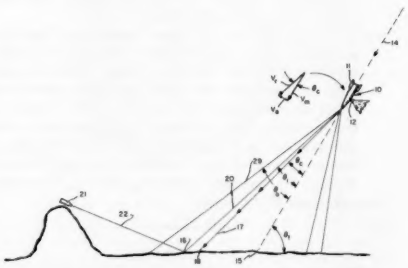
PROJECTILE TRAJECTORY CORRECTION SYSTEM

Robert E. King, Palos Verdes Peninsula; Wayne A. Massey, Garden Grove, and John M. Smith, Torrance, all of Calif., assignors to TRW, Redondo Beach, Calif.

Filed Jan. 3, 1972, Ser. No. 214,879

Int. Cl. F42b *15/18*

U.S. Cl. 244—3.16 **6 Claims**



1. The method of correcting the terminal portion of the trajectory of a projectile in free fall and rotating about its axis, the projectile being directed toward a target, said method comprising the steps of:

a. illuminating the target;

b. detecting the light reflected from the target within a predetermined hollow cone extending between the rotating projectile and the ground as the projectile approaches the target;

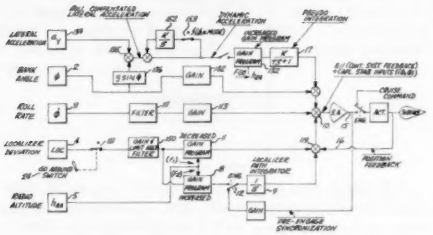
c. applying a single lateral impulse to the projectile in accordance with the image of the light reflected from the target; and

d. determining the polar coordinates of the image of the target received at the projectile, thereby to determine the instant of time when the single lateral impulse is applied to the projectile, whereby the direction of the impulse applied to the projectile and the instant the impulse is applied is determined by the polar coordinates of the target image.

3,843,077
AUTOMATIC APPROACH LANDING AND GO-AROUND ROLL AXIS CONTROL SYSTEM FOR AIRCRAFT

Jimmie H. Boone, Bellevue; Gary A. Chenkovich, Seattle, both of Wash.; Brian F. Corcoran, Bettendorf, Iowa; Arley C. Marley, III, Renton, and Robert D. Simpson, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 7, 1972, Ser. No. 224,007
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 A **13 Claims**



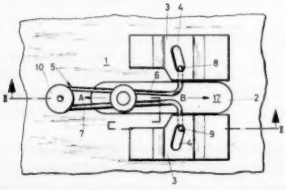
1. In combination in an aircraft having a roll axis control system and having an output terminal: first means coupled to said output terminal for storing a constant signal representative of commanded ground track error;

second means coupled to said output terminal for generating a further signal representative of change in ground track thereby providing a signal to null or cancel said commanded ground track error signal or providing ground track referenced control during go-around,; and wherein said first means comprises: sensor means providing a signal representative of aircraft ground track error; integrator circuit means connected in feedback circuit around said output terminal; second switching means connected in series circuit between said sensor means and said control system output terminal; third switching means connected in series circuit between said control system output terminal and said integrator circuit means and switching simultaneously with said second switching means.

3,843,078
DEVICE FOR SECURING FLEXIBLE FUEL TANKS IN AN AIRCRAFT

Volker Schon, Munich, Germany; Bernd R. Walter, Kirkland, Wash., and Peter Zipperling, Poing, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munchen, Germany

Filed Nov. 8, 1973, Ser. No. 414,093
Claims priority, application Germany, Nov. 18, 1972, 2256744
Int. Cl. B64d *37/00*
U.S. Cl. 244—135 B **3 Claims**

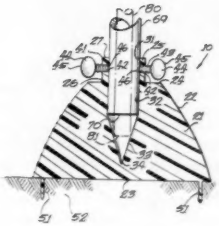


1. Device for securing flexible fuel tanks in an aircraft, which consists of two flexible legs which are arranged on one wall of the aircraft structure, which legs are placed around the shaft of a locking pin which is guided through the wall of the aircraft structure, comprising the improvement wherein the flexible legs (**6, 7**) consist of a U-shaped spring wire (**5**) which is arranged in a plane parallel to the wall (**1**) of the aircraft structure, and that in the zone of the open side of the spring wire (**5**) a longitudinal opening (**2**) is provided in the wall (**1**), which longitudinal opening permits the passage of a tapered locking pin (**12**) having a neck portion, said locking pin being secured to the fuel tank, for engagement between the legs (**6, 7**), whereby the longitudinal opening (**2**) extends so far over the open side of the spring wire (**5**) that the locking pin, through a longitudinal movement in this zone (**17**), can be released from an embracing engagement by the flexible legs (**6, 7**).

3,843,079
FLAG STANDARD

David Charles Reisling, 614 Western Ave., Mingo Junction, Ohio 43938

Filed Oct. 9, 1973, Ser. No. 404,410
Int. Cl. F16m *13/00*
U.S. Cl. 248—44 **4 Claims**



1. A flag standard intended for receiving and holding a flag staff having a flag attached thereto in a display position, comprising a truncated hemi-spherical base member having hemispherical side surfaces, a horizontally extending top surface; a hollow open ended cylindrical socket member formed integrally with the base member on the top surface thereof and disposed concentric with the base member, the top outermost end of the socket member projecting axially outwardly of the top surface of the base member; a cylindrical bore extending through the socket member concentric with the axis of the base member; a cylindrical bore disposed inwardly of the base member in axial alignment with the socket cylindrical bore and in communication therewith through the top surface of the base member, the base member cylindrical bore terminating in an inverted conical hollow configuration having the apex thereof terminating along the axis of the base member in a position adjacent the bottom surface of the base member; a plurality of circumferally spaced apart radially extending internally threaded openings spaced about the side walls of the socket member and extending radially therethrough; a plurality of fastener means, each fastener means associated with one of the threaded openings and adapted to be threadedly engaged therein in a manner to project into or be withdrawn from the socket member cylindrical bore depending upon the direction of rotation of the fastener means about its axis, the innermost ends of each of the fastener means adapted to frictionally engage the side walls of a flag staff inserted into the socket member; the bottom end of the flag staff engaging the interior conical surface of the bottom of the base member cylindrical bore in a manner to seat the flag staff concentrically of the base member; and a plurality of rod members formed integrally with the base member and extending vertically downwardly from the bottom surface thereof, each of the rod members having a pointed outermost projecting end

adapted to assist the rod members in penetrating a ground type surface into which they are adapted to be inserted, the rod members being spaced equally about the base member bottom surface in positions disposed a slight radial distance inwardly from the outer peripheral edge of the bottom surface such that the rods may be driven into a ground surface until the base surface engages the ground surface to thus firmly and securely maintain the base member in the desired location with the desired stability for displaying a flat therefrom.

3,843,080

MOUNTING DEVICE FOR DEPENDING STRUCTURAL MEMBERS FROM DECK PLATE OR THE LIKE

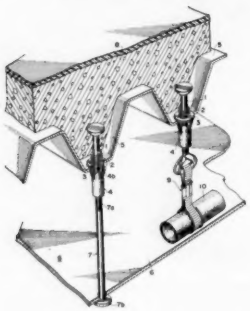
Hiroshi Imai, and Momoki Nakagawa, both of Tokyo, Japan, assignors to ITT Industries, Inc., New York, N.Y.

Filed June 18, 1971, Ser. No. 154,324

Claims priority, application Japan, Feb. 25, 1971, 46-10952; May 7, 1971, 46-14942

Int. Cl. F16l *3/00*

U.S. Cl. 248—58 **7 Claims**



1. A mounting device for depending structural members from deck plate or the like, the deck plate adapted to have concrete poured onto the upper surface thereof to anchor the device to said deck plate, which comprises:

A. a bolt having projecting means thereon,

B. a spring fitted to said bolt below said projection means and having the upper end stopped by said projection means,

C. a generally cylindrical member engaged with the lower end of the bolt,

D. resilient expandable means associated with said cylindrical member and located at least at the upper end of the cylindrical member,

E. said cylindrical member and expandable means adapted to be pushed axially through a hole in the said deck plate from the upper surface thereof by pressing down on the upper end of the bolt and thereby bringing the edge of the hole into constricting engagement with said expandable means to enable passage of said expandable means and cylindrical member, but said expandable means adapted to expand after passing the hole to the bottom surface of said deck plate,

F. said spring adapted to be compressed between said projection means and said upper surface while said bolt is being pressed downward and serving upon release of said bolt to bias the bolt to move upward,

G. said expandable means having structure adapted to engage the lower surface of said deck plate to maintain the bolt erect on account of the action of said spring while resisting withdrawal of said bolt through said hole from above said deck plate,

H. means on said cylindrical member for coupling of a depending structural member to the bottom end of said bolt.

3,843,081

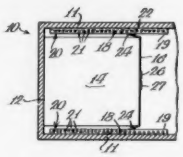
ADAPTORS FOR ANCHORING STRAPS

William A. Meier, Hoffman Estates, and Edward P. Johnson, Arlington Heights, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed May 12, 1972, Ser. No. 252,872

Int. Cl. B60p *7/08;* **B61d** *45/00;* **B65j** *1/22*

U.S. Cl. 248—223 **4 Claims**



1. An adaptor for anchoring a strap in position relative to a support defining a plurality of spaced openings, said adaptor being rigidly constructed and generally U-shaped with one rigid leg being longer than the other and each of said legs having rigid hook portions at its outer ends, the shorter of said leg being disposed normal to its respective hook portion and adapted to receive the strap in its loaded condition and the longer of said legs being disposed at an acute angle to its respective hook portion and adapted to receive the strap to permit removal of the adaptor from its support, said adaptor being constructed and arranged whereby the leg end portions extend through said spaced openings and the hook portions are disposed generally parallel to and abut said support on the side of said support opposite to where the strap is located to prevent removal of said adaptor from said support during normal loading of said adaptor, but which permits removal of the adaptor from its support when the strap is disposed about the longer leg and the adaptor is rotated in excess of 90° from the loading direction with the shorter leg being moved in the direction of its hook portion.

3,843,082

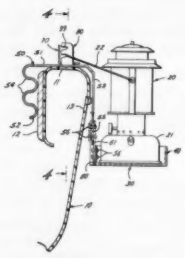
HOLDER FOR GASOLINE LANTERN

Billy R. Garrett, 5336 Conroy St., Fort Worth, Tex. 76134

Filed Jan. 28, 1974, Ser. No. 436,935

Int. Cl. F16m *13/00*

U.S. Cl. 248—226 E **2 Claims**



1. In a device for displaying a lighted gasoline lantern from a small pleasure boat, usually powered by an outboard engine, having gunwales of hollow construction characterized by a broad top surface and having inner and outer wall surfaces extending downwardly from the top surface, the combination of a cylindrical receptacle, comparatively short relative to its diameter, which in use is disposed vertically and has the bot-

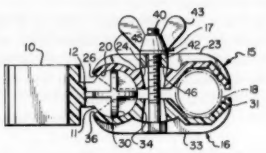
tom of a lantern received bodily therein, and an elongated metal strip, characterized by its inherent spring tension but soft and easily bent, which is bent substantially 180° intermediate its ends and in use has portions thereof in overlying engagement with the top surface and the adjacent inner and outer wall surfaces of a gunwale, in yieldable, frictional engagement therewith, the last mentioned portion extending downwardly a substantial distance below the top surface and having means removably and adjustably connecting it to the receptacle, to support the receptacle on the gunwale at a predetermined distance below the top thereof, and detent means, rigidly and removably connected to a middle portion of the strip and adjustable longitudinally relative thereto, for selective engagement by the bail or handle of a lantern having its bottom in place in the receptacle, to prevent accidental displacement thereof.

3,843,083

MOUNTING APPARATUS FOR PORTABLE DEVICE

Rene M. Angibaud, Vernon, France, assignor to Societe Les Piles Wonder, Saint Ouen, France

Filed Oct. 29, 1973, Ser. No. 410,554
Claims priority, application France, Nov. 9, 1972, 72.39751
Int. Cl. F16b *2/00*; **F21l** *15/00*
U.S. Cl. 248—229 **4 Claims**



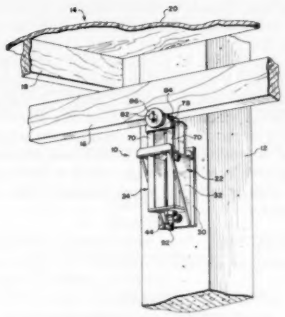
1. An improved adjustable mounting apparatus for adjustably mounting a portable device on a support, comprising
a mounting bracket for engaging the portable device;
a ball fixedly attached to said bracket; and
clamping means for partially surrounding said ball and a portion of the support and for holding the ball in a plurality of orientations relative to the support, said clamping means including
first and second substantially identical jaw members each having
a spherically shaped recess dimensioned to mate with a portion of said ball;
a generally cylindrically shaped recess, the recesses opening toward a common plane;
longitudinal reinforcing ribs;
means defining a transverse central opening, between said ribs and perpendicular to said plane, through which a fastener can pass; and
a convex surface portion around said opening and between said ribs; and
threaded fastener means for retaining said jaw members in facing relationship to clamp said ball between said spherical recesses and said support between said cylindrical recesses,
said fastener means including a washer having a concave surface for mating with the convex surface of one of said jaw members,
a nut; and
a bolt having flat portions engagable with the ribs on the other one of said jaw members to prevent rotation thereof when said nut is threaded thereon.

3,843,084

COLUMN-MOUNTED SHORING BRACKET ASSEMBLY FOR OVERHEAD FORMWORK

R. Kirk Gregory, Barrington, and Robert J. Flathau, Palatine, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.

Filed June 4, 1973, Ser. No. 366,434
Int. Cl. A47f *5/10*; **A47h** *33/10*; **E04g** *17/16*
U.S. Cl. 248—295 **7 Claims**



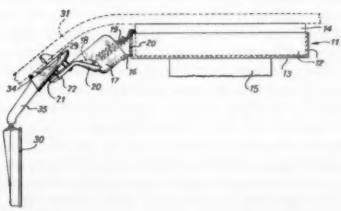
1. A shoring bracket adapted to support a horizontal stringer forming a part of a concrete-receiving, pallet-type formwork used in the erection of a multi-story building, said bracket comprising a horizontal base frame having means whereby it may be fixedly secured to a vertical column of the building, a vertically elongated carriage mounted with respect to the base frame so that it is slidable vertically between a raised and a lowered position, a loadbearing roller on the upper end of said carriage, a vertical jack screw having its upper end swivelly connected to the base plate and depending therefrom, and means establishing a threaded connection between said jack screw and the lower region of the carriage, whereby rotation of the jack screw in opposite directions will effect raising and lowering of the carriage and formwork with the intervening region of the jack screw between such threaded connection and base frame supporting the carriage and formwork under tension.

3,843,085

SUPPORTING STRUCTURE FOR DISPOSABLE TISSUE DISPENSER

Mario de la Vega Castro, Anaxagoras 1308, Mexico 13, D. F., Mexico

Filed Oct. 23, 1973, Ser. No. 408,360
Claims priority, application Mexico, Sept. 14, 1973, 146187
Int. Cl. F16m *13/02*
U.S. Cl. 248—311 **1 Claim**



1. A supporting structure resiliently pressed against the ceiling of a vehicle to hold a disposable tissue dispensing box

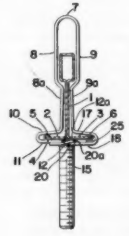
in the frame and pressed against said vehicle ceiling, wherein said supporting structure comprises a substantially rectangular frame having side and end walls with a perpendicular projection at the lower edge of said side and end walls towards the interior of said frame conforming a supporting flange to support a disposable tissue box having its outlet turned downward; said frame being attached by an integral flexible hinge means to a fastening channel member having an inner projection to which is fixed the end of a spring means having its other end fastened to the upper edge of one of said frame and walls; wherein said frame end wall to which said spring means is coupled and said channel member includes reinforcing sheet-metal caps and wherein said channel member includes holes through which screw means are passed to clamp said channel member to the bosses or projections of an adapter, which adapter comprises a semi-rigid cover with side, bottom and an end walls, said end wall including a perpendicularly inwardly projecting flange which engages a base of a rear-view mirror, and said adapter having two projecting tabs located at the ends of said sidewalls opposite the end wall with flange, said tabs having each a hole through which a bolt is passed to clamp said adapter onto the upper portion of the rod of said rear-view mirror.

3,843,086

SUSPENSION FASTENER

Wilbur F. Ptak, Middleburg Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Mar. 22, 1971, Ser. No. 126,413
Int. Cl. E04b *5/52*; **E06b** *3/54*
U.S. Cl. 248—317 **4 Claims**



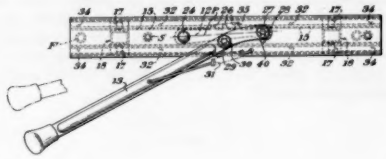
1. A suspension fastener adapted to be secured to a T-bar, said fastener comprising a resilient one-piece member having divergent leg portions, and flanges adapted to overlap each other and underlie a portion of said T-bar when said leg portions are moved toward each other, one of said fastener flanges being provided with a pair of transversely spaced recesses each extending inwardly from the side edges of said fastener flange and each having at least one edge extending substantially perpendicular to said side edges and constituting a shoulder or stop, the other of said fastener flanges including a pair of transversely spaced tongues formed by slitting the metal of said other fastener flange inwardly from each of the side edges of said other fastener flange and bending the metal adjacent one side of the slit out of the plane of said other fastener flange, whereby when said fastener flanges are moved into overlapping relationship with each other, said tongues initially separate said flanges and subsequently resiliently enter said recesses and engage said shoulders or stops to impede inadvertent separation of said fastener flanges from each other, and a supporting screw secured to and depending from one of said fastener flanges.

3,843,087

SEAT SLIDE CATCH MECHANISM

Albert John Adams, Fetcham, England, assignor to A. W. Chapman Limited, London, England

Filed May 14, 1973, Ser. No. 359,783
Claims priority, application Great Britain, June 6, 1972, 26245/72
Int. Cl. B60m *1/08*
U.S. Cl. 248—430 **4 Claims**



1. A seat slide mechanism comprising
a. a rail securable to a floor so as to be fixed thereto;
b. a slide securable to a seat so as to be fixed thereto;
c. means providing parallel track surfaces on said rail and means providing parallel track surfaces on said slide, the rail and the slide being so disposed that one of the track surfaces on said rail is in vertical register with one of the track surfaces on said slide and that the other of the track surfaces on said rail is in vertical register with the other of the track surfaces on said slide;
d. two rollers in contact with said one track surfaces and spaced from one another longitudinally of said rail and said slide, and two additional rollers in contact with said other track surfaces and spaced from one another longitudinally of said rail and said slide;
e. a catch lever having two ends and an intermediate portion;
f. a catch lever operating handle having two ends;
g. first means establishing a pivotal connection between said operating handle and said slide;
h. a slot in said slide and second means extending through said slot and establishing a pivotal connection between corresponding one ends of said catch lever and said operating handle;
i. third means establishing a pivotal connection between the other end of said catch lever and said slide;
j. at least two prongs formed in said intermediate portion of said catch lever;
k. a rack on said rail, said rack being engageable by said prongs to effect a releasable connection of the slide to the rail;
l. spring means connected between said slide and said operating handle and tending at all times to urge said prongs into engagement with said rack.

3,843,088

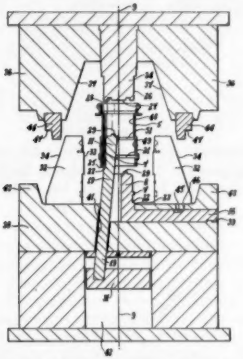
MOULDING APPARATUS

Noel Peter McLoughlin, and James Livingstone Taylor, both of Victoria, Australia, assignors to Tupperware of Australia Pty. Ltd. and Knox Schlapp Pty. Ltd., both of Victoria, Australia

Filed Feb. 1, 1973, Ser. No. 328,819
Claims priority, application Australia, Feb. 1, 1972, 7811/72
Int. Cl. B29c *7/00, 17/00*; **B29d** *23/02*; **B29f** *1/14*
U.S. Cl. 249—144 **3 Claims**

1. Moulding apparatus including an outer moulding means expandable away from the article moulded, said outer moulding means being comprised by a plurality of transversely slidable outer moulding members supported on a mould base and an expandable and collapsible core located within said outer

moulding means, said core being expandable to provide a moulding gap between said core and said outer moulding means in which an article to be produced may be moulded and collapsible to facilitate removal of the moulded article therefrom, said core being comprised of at least three separate core members combining when said core is in its expanded position to provide an outer moulding surface, at least one of said core members being a transversely slidable core member movable



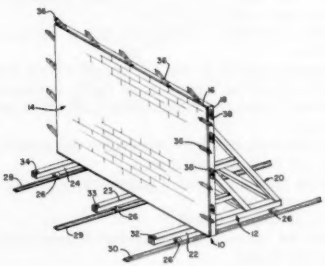
inwardly perpendicularly with the core axis and at least two of two core members being longitudinally slidable core members slidable in a generally longitudinal direction at an angle to the actual longitudinal axis of the moulding core so that on sliding from an expanded moulding position to a retracted position the surface portions of the moulding surface provided by each of the longitudinal members also moves inwardly of the moulding core and wherein each of said core members is provided with cooling means within its structure.

3,843,089

TEXTURED CONCRETE MOLD CONSTRUCTION FOR VERTICALLY POURING CONCRETE SLABS

Ray John Scholz, and Thomas Patrick Fuller, both of Los Altos, Calif., assignors to Printex Concrete Products, Santa Clara, Calif.

Filed Aug. 10, 1972, Ser. No. 279,406
Int. Cl. B28b *7/02*
U.S. Cl. 249—158 **3 Claims**



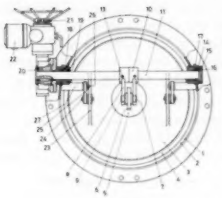
1. An adjustable, reusable mold for forming concrete slabs, comprising: a first concrete impervious form member; a concrete impervious base member having an upper surface; means for fixedly supporting said first form member in a generally upright position on the upper surface of said base member; a second concrete impervious form member; means for supporting said second member in a generally upright position and for mounting said second member for movement toward and away from said first fixed member along a path generally parallel to said upper surface of said base member wherein said path comprises a plurality of rails and said supporting and moving means comprises a wheeled carriage adapted to roll on said rails; means for releasably coupling said second member at a predetermined distance from said first member on said base member; a pair of concrete impervious side members moveable into closing relationship to the side opening defined by said first and second members; and means for retaining said pair of side members in fluid-tight engagement with said first and second upright members and said base member, and said base member is provided with a plurality of slots into which respective of said plurality of rails extends, the fixedly supporting means for said first member including first engagement means, said carriage including a plurality of second engagement means adapted to be extended through said slots and interlock with said first engagement means.

3,843,090

DAMPER

Heinz Schneider, Lendersdorf, and Josef Becker, Obermaubach, both of Germany, assignors to Zimmerman & Jansen GmbH, Duren, Germany

Filed Jan. 11, 1973, Ser. No. 322,876
Claims priority, application Germany, Jan. 15, 1972, 2201940; June 2, 1972, 2226986
Int. Cl. F16k *31/52*
U.S. Cl. 251—215 **20 Claims**



1. A damper, comprising:

a. a tubular housing having an intermediate internal annular seat,

b. a damper plate mounted within the housing for swinging movement about a transverse shaft from a first position wherein its periphy engages the seat to a second position removed from the seat,

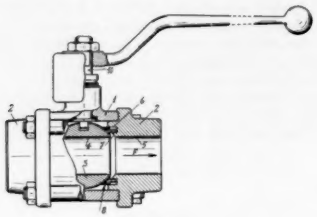
c. an actuating lever connecting the plate to the shaft for providing pressure of the damper plate against the seat,

d. guide means independent of the actuating lever for regulating the motion of the damper plate from the first position to the second position in such a way that the movement adjacent the first position is primarily transverse motion in the direction of a line at a right angle to the plane of the seat and in such a way that the part of the motion adjacent the second position is primarily swinging movement about an an axis spaced from and parallel to the said plane of the seat,

wherein the length of the actuating lever (**8, 37**) of the damper plate (**3, 30**) is shorter than the radius of the plate and a hub (**10, 38**) of the shaft lies within the space enclosed by the tubular housing (**1, 28**), and

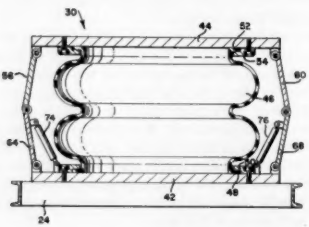
wherein the shaft (**11, 39**) of the actuating lever is guided on both sides in bearings (**14, 18, 43, 44**) that project outwardly of the housing and are mounted in the wall of the housing.

3,843,091
BALL VALVE FOR HIGH TEMPERATURES
Jean Gachot, 26, avenue de Paris, Soisy sous Montmorency, France
Filed Apr. 9, 1973, Ser. No. 349,544
Claims priority, application France, Apr. 25, 1972, 72.14620
Int. Cl. F16k 5/06
U.S. Cl. 251—315 8 Claims



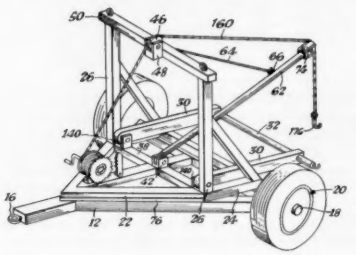
1. A ball valve to resist high temperatures, comprising a hollow valve body limited by two flanges and containing a rotatable ball with a passageway for the fluid, means to rotate the ball, a sealing ring of hot-flowing resin between said ball and at least one of said flanges, the ball in the closed position of the valve having freedom of displacement within the valve body relative to said valve rotating means in the downstream direction, the flange which is downstream in the fluid flow direction having an annular groove including lateral groove walls, the sealing ring being partially disposed in said groove, said groove having a residual hollow volume which is at least equal to the volume of that portion of the sealing ring which is located outside the groove, in order to permit said groove to receive the whole of the material of the sealing ring which is located outside the groove, said downstream flange having opposite to the ball and in the vicinity of the groove a metallic seat to receive the ball in the event of elimination of the sealing ring material at high temperatures, the sealing ring having at its end remote from the ball a tubular extension tightly fitted over one of the lateral groove walls.

3,843,092
PULL TRAILER AND LOAD LIFT MEANS
Carl W. Oehler, 1664 S.E. 4th Ct., Deerfield Beach, Fla. 33441
Division of Ser. No. 110,486, Jan. 28, 1971, Pat. No. 3,752,502. This application Apr. 30, 1973, Ser. No. 355,463
Int. Cl. B66f 3/24
U.S. Cl. 254—93 HP 7 Claims



1. A load lifting and supporting device, comprising:
a rectangular base;
a rectangular top plate located above the base and adapted to engage and support the load;
an inflatable enclosure positioned between the base and the top plate, the enclosure supporting the top plate;
a plurality of first hinge leaves, one leaf being hinged to each side of the top plate and extending generally downwardly therefrom; and
a plurality of second hinge leaves, one leaf being hinged to each side of the base and extending generally upwardly therefrom, the lower end of each first leaf being hinged to the upper end of the second leaf on the corresponding side of the base to form hinges each having an axis parallel to the side of the base to which the second hinge leaf thereof is secured.

3,843,093
PORTABLE HOIST
James G. Thompson, and Edgar M. Reynolds, both of Indialantic, Fla., assignors to I. I Incorporated, Melbourne, Fla.
Filed Jan. 9, 1973, Ser. No. 322,227
Int. Cl. B66c 23/60
U.S. Cl. 254—139.1 4 Claims



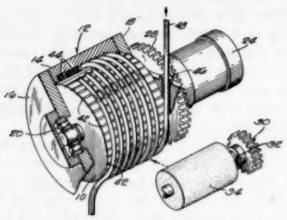
1. A portable hoist and disabled vehicle towing trailer comprising:
a first frame, said frame having a plurality of first frame members connected together in a common plane;
a pair of wheels, each wheel rotatably connected to said first frame;
a vehicle hitching means connected at one end to said first frame;
a second frame, said second frame having a plurality of second frame members rigidly connected together in a common plane, said second frame coupled above and adjacent to said first frame;
means to rotatably connect said second frame to said first frame;
a winch connected to one end of said second frame;
a pair of vertical support arms rigidly connected to said second frame and disposed vertically above said second frame;
a vertical cross-member connected to the upper ends rigidly to said vertical support arms;
a pulley centrally disposed and rotatably connected to said cross-members;
a pivotal support frame;
means for connecting said pivotal support frame to said second frame;
a vehicle attaching means connected to a free end of said pivotal support frame;
a boom;
means attached to said second frame for removably coupling said boom to said second frame;
means for connecting a midportion of said boom to said cross-members;
a cable connected to said winch and said pulley and engageable with said pivotal support frame.

3,843,094

TRACTION DEVICE

Robert H. Watts, P.O. Box 90302, Cincinnati, Ohio 53202

Filed Jan. 5, 1973, Ser. No. 321,294
Int. Cl. B66d *1/36*
U.S. Cl. 254—150 R **7 Claims**



1. A traction device comprising:

a drum having a generally cylindrical surface,

means for rotating the drum in either direction,

a generally cylindrical housing enclosing the drum and having an internal helical groove positioned close enough to the drum so as to engage and confine therein a rope wound directly on said drum surface whereby the rope must follow the groove and is, therefore, forced axially over said surface,

an aperture in one end of the housing in alignment with the corresponding end of the helical groove to permit rope to be entered into the groove and fed around the drum following the groove,

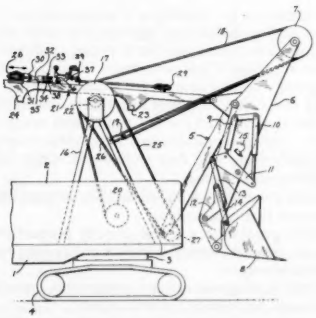
an aperture in the other end of the housing in alignment with the other end of the helical groove to permit egress of the rope from the housing.

3,843,095

HYDRAULIC CROWD CABLE TAKE-UP SYSTEM

Robert J. Ruperi, South Milwaukee, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Dec. 22, 1971, Ser. No. 210,709
Int. Cl. B66d *1/48*
U.S. Cl. 254—173 B **4 Claims**



1. In a crowd mechanism of an excavator of the type that utilizes a crowd cable about sheaves to act upon a handle and having at least one sheave on a linearly adjustable mounting for taking-up slack in said crowd cable, the combination with said one sheave of

a single acting linear hydraulic actuator mounted between an excavator structure and said linearly adjustable mounting of said sheave to linearly adjust said sheave and having a cylinder bore with a blind end and a rod end, a piston reciprobably mounted in said cylinder bore with a piston rod projecting from said rod end of said cylinder; a reservoir of operating fluid connected to a source of pressurized air to maintain said operating fluid under pressure;

a slack take-up stop valve connected by conduit between said operating fluid under pressure and said blind end of said cylinder bore, said slack take-up stop valve being normally closed;

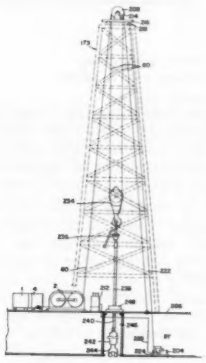
and a controller for opening and closing said slack takeup stop valve at predetermined times to connect and disconnect said blind end of said cylinder bore with said operating fluid under pressure.

3,843,096

TRACTION DRUM WINCH WHICH EXERTS A PREDETERMINED CONSTANT TENSION ON A CABLE

John Hart Wilson, deceased, late of Wichita Falls, Tex. (Evelyn Egan Wilson, executrix); J. N. Sherrill, Jr., and Virginia Wilson Hulver, both of Wichita Falls, Tex. (executors), assignors to Evelyn Egan Wilson; J. N. Sherrill, Jr. and Virginia Wilson Hulver

Division of Ser. No. 78,854, Nov. 7, 1970, abandoned, which is a division of Ser. No. 788,256, Dec. 31, 1968, Pat. No. 3,606,257. This application Nov. 27, 1972, Ser. No. 309,628
Int. Cl. B66d *1/48*
U.S. Cl. 254—173 R **4 Claims**



1. An apparatus for drilling a well in the floor of a body of water from a drill ship or the like having an upright supporting derrick structure thereon, which apparatus comprises:

a. a tension controlled traction drum winching mechanism for a drilling rig mounted on the drill ship and being associated with the upright supporting derrick structure,

b. a prime mover connected in driving relation with the traction drum winching mechanism,

c. said prime mover being so connected through a fluid actuated clutch interposed between said prime mover and said tension controlled traction drum winching mechanism, which clutch is adapted to slip continuously,

d. a crown block, including sheaves, mounted on the upright supporting derrick structure, near the upper end thereof,

e. a cable associated with and being common to said drilling rig and said tension controlled traction drum winching mechanism and passing over the sheaves of said crown block to form a loop therebelow,

1. a traveling block supported in the loop of said cable within the upright supporting derrick structure to support drill pipe therebelow,

2. said crown block having a portion of its weight supported on a pivotable lever located on the derrick,

f. a transducer weight sensing mechanism having a piston element thereon in contact with said lever to determine the load on said crown block, and

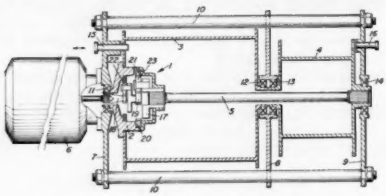
g. pressure control sensing actuator means associated with said transducer weight sensing mechanism to regulate fluid, under pressure, to said fluid actuated clutch to cause engagement of the clutch in direct relation to the load applied to the crown block.

3,843,097

TWO-DRUM WINCH, WITH BUILT-IN REDUCTION GEAR

Jean Noly, La Clayette, France, assignor to Potain, Larue, France

Filed Aug. 2, 1972, Ser. No. 277,329
Claims priority, application France, Aug. 9, 1971, 71.29791
Int. Cl. B66d 1/22
U.S. Cl. 254—184 **4 Claims**



1. A hoisting winch, comprising:

a drive motor having a drive shaft;

a first and a second drum;

a differential reduction gear means connected to said motor and to said drums for causing one drum to rotate when the other is locked and vice versa, said differential reduction gear means comprising an epicycloidal train including a sun gear, a planet gear and a crown wheel wherein said sun gear is connected to said drive shaft, said planet gear is connected to said first drum and said crown wheel is connected to said second drum; and

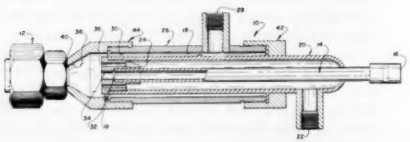
locking means for holding either of said two drums fast, whereby locking of said first drum causes said crown wheel and accordingly said second drum to rotate and locking of said second drum causes said planet gear and accordingly said first drum to rotate.

3,843,098

FLUID LAYERING ASSEMBLY FOR ATTACHMENT TO A JET OR SPINNERET FOR PRODUCTION OF SIDE-BY-SIDE AND SHEATH-CORE FIBERS

Bobby M. Phillips, and Hal O. Jones, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,760
Int. Cl. B01f 5/00
U.S. Cl. 259—4 **2 Claims**



1. Fluid layering assembly for attachment to a jet or spinneret for spinning from flows of fiber forming solution or melts side-by-side and sheath-core bicomponent fibers, said assembly comprising:

three concentric cylindrical pipes;

a breaker plate means;

each pipe having inlet and outlet means for receiving into and dispensing from the pipe a flow of fiber forming solution or melt;

the inner concentric pipe having attached at its outlet means the breaker plate means;

the breaker plate means having formed therein a central opening and a plurality of openings arranged radially around the central opening, the central opening being in communication with the outlet means of the inner concentric pipe and the plurality of openings being in communication with the outlet means of the middle concentric pipe; and

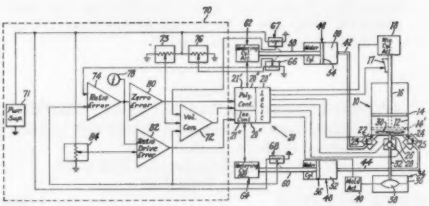
means defining a chamber that is downstream of and in axial alignment with the three concentric cylindrical pipes and the breaker plate means for receiving and combining the flows from the outer as well as the inner and middle pipes and the breaker plate means, and an outlet means for the combined flows from the chamber to the orifices of the jet or spinneret which may be attached to the outlet means.

3,843,099

INSTANTANEOUS RATIONING MEANS

Robert J. Duncan, Magnolia, Mass., assignor to USM Corporation, Boston, Mass.

Filed Feb. 26, 1973, Ser. No. 335,541
Int. Cl. B28c 7/04
U.S. Cl. 259—23 **3 Claims**



1. In apparatus for dispensing a multicomponent composition provided by the mixing together of at least two components in predetermined ratio in a mixing chamber including means for supplying a first component to said chamber, means for supplying a second component to said chamber, means for metering said first component supplied to said chamber, and means for metering the second component supplied to said chamber, a component ratioing control means comprising:

a. means driving said first component supply means at a predetermined value;

b. means generating a signal directly proportional to said metered first component;

c. means generating a signal directly proportional to the predetermined ratio of said first component to said second component;

d. means biasing said second component metering means with said predetermined ratio signal;

e. means for generating a signal directly proportional to said ratio biased, metered second component;

f. means for directly comparing said first component metering signal and said second component ratio biased metering signal;

g. means for generating an error signal directly proportional to the difference between said compared signals; and

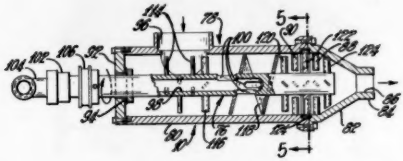
h. means for driving one of said component supply means responsive to said error signal in a manner which tends to reduce said error to zero.

3,843,100

METHOD AND APPARATUS FOR MIXING SOLIDS AND LIQUIDS

James Lynn Haas, Aliquippa, Pa., and Paul A. Goodridge, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed July 13, 1972, Ser. No. 271,422
Int. Cl. B01f 7/02
U.S. Cl. 259—25 12 Claims



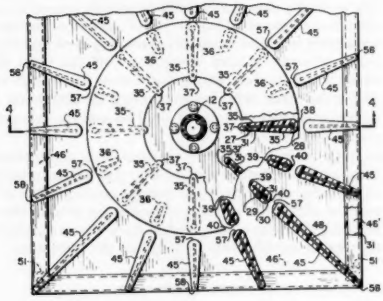
1. A method of mixing particulate solid material with liquid components which, when mixed together, form a foamable mixture, said method comprising mixing the foamable liquid components together, subsequently supplying the mixed liquid to a first, central zone, supplying the particulate solid material to a second zone surrounding the first zone, directing the mixed liquid outwardly from the first zone toward the second zone, and mixing together the solid material and the mixed liquid.

3,843,101

FLOTATION MACHINE AND IMPELLER THEREFOR

Charles A. Green, Apartado 82, Chihuahua, Mexico

Filed Oct. 30, 1972, Ser. No. 301,883
Int. Cl. B01f 5/16
U.S. Cl. 259—96 16 Claims



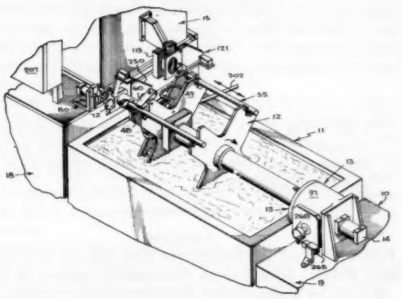
1. A rotatable impeller for a flotation machine, comprising:
a circular lower plate;
a circular upper plate concentric with and spaced from said lower plate, said upper plate having a circular central opening therein;
a series of vanes extending generally radially and disposed between said upper and lower plates, said vanes being constructed and arranged to pump pulp and the like from said central opening of said upper plate and discharge the same from the periphery of the space between said plates; and
a series of fingers spaced around the periphery of said lower plate and depending therefrom, said depending fingers being equally spaced about the periphery of the underside of said lower plate, having a radial length less than the radial length of said vanes and having a lateral thickness adjacent the outer edge greater than adjacent the inner edge thereof.

3,843,102

HEAT TREATING APPARATUS

Harry Bradshaw, Cordele, Ga., and Barney R. Powell, Montgomery, Ala., assignors to Standard Forge and Axle Company, Incorporated, Montgomery, Ala.

Filed May 4, 1973, Ser. No. 357,190
Int. Cl. C21d 9/30
U.S. Cl. 266—4 E 42 Claims



1. An apparatus for heat treating an end portion of an elongated workpiece comprising a quenching tank, a frame assembly, a carrier assembly partially submerisible in a quenching medium disposed in said quenching tank, mounted on said frame assembly for rotation about a longitudinally disposed axis, means disposed on said carrier assembly, circumferentially spaced relative to said axis, for detachably mounting a plurality of said elongated workpieces on said carrier assembly, means for rotatably indexing said carrier assembly to position an elongated workpiece mounted in one of said detachably mounting means of said carrier assembly in a loading and unloading station, a heat treating station and at least one quenching station disposed beneath the surface of a quenching medium disposed in said quenching tank, means disposed on said frame assembly for producing a heated zone of predetermined temperature at said heat treating station, means for extending and retracting said carrier assembly along the longitudinal axis thereof to correspondingly extend into and retract from said heating zone the end portion of an elongated workpiece mounted on said carrier assembly and positioned at said heat treating station, and control means for operating said carrier assembly indexing means and said extending and retracting means.

3,843,103

HEAVY PLATE CUTTING APPARATUS

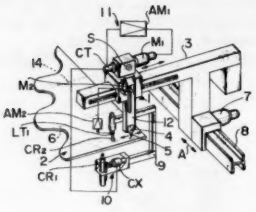
Kazuo Sekine; Michio Mimura, both of Yokohama; Yasuhiko Oniki, Tokyo, and Nobushige Koyano, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,002
Claims priority, application Japan, Jan. 21, 1972, 47-8142
Int. Cl. B23k 7/02, 7/10
U.S. Cl. 266—23 M 11 Claims

1. A heavy plate cutting apparatus comprising:
a floating carriage movably supported above a steel plate to be cut,
a floating arm and a plate cutting torch attached to said floating carriage,

plate thickness detecting means mounted on one end of said floating arm and extending below the lower surface of said plate, and

torch controlling means responsive to output signals of said plate thickness detecting means for moving said torch in



a direction which is substantially perpendicular to the direction of movement of said torch during a cutting operation, whereby the beveled edge of said steel plate extends in a straight line.

3,843,104

FURNACE-TOP DISTRIBUTOR FOR SHAFT FURNACES

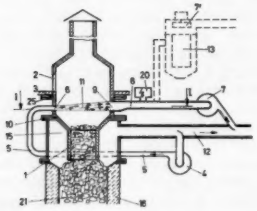
Hans Burger, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Aug. 1, 1973, Ser. No. 384,411

Claims priority, application Switzerland, Aug. 11, 1972, 11909/72

Int. Cl. F27b *1/10*

U.S. Cl. 266—27 **10 Claims**



1. Top distributor for a shaft furnace, in particular a cupola furnace, comprising furnace walls forming an upwardly extending shaft having a lower portion arranged to contain a charge and an upper portion located above the charge, said upper portion forming a charging aperture, wherein the improvement comprises a gas inlet port formed in one side of said upper portion, a gas outlet port formed in said upper portion on the opposite side thereof from said inlet port and in alignment with said inlet port, a thrust generator located exteriorly of said shaft, a duct connected to said generator and said inlet port for supplying a flow of gas to said inlet port, a suction device located exteriorly of said shaft, a pipe connected between said outlet port and said suction device so that the flow of gas directed into said shaft from said inlet port traverses said shaft perpendicularly to the gas rising in the shaft and flows outwardly through said outlet port, and the cross-sectional area of said inlet port at its connection to said shaft is smaller than the cross-sectional area of said outlet port at its connection to said shaft.

3,843,105

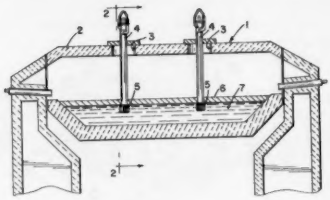
APPARATUS AND METHOD FOR CONTACTING MOLTEN METAL WITH GAS

Yi-Chung Chang, Murrysville, Pa., assignor to Berry Metal Company, Harmony, Pa.

Filed Apr. 5, 1973, Ser. No. 348,350

Int. Cl. F27d *23/00*

U.S. Cl. 266—34 L **24 Claims**



1. An oxygen injection lance having a substantially upper elongated section and an immersible nozzle tip section for submersion in the molten bath in a high temperature furnace, said nozzle tip section being at the lower end of the lance and comprising:

a longitudinally extending oxygen passage extending in each section,

oxygen orifice means in the nozzle tip section communicating with the oxygen passage,

coolant passageway means in the nozzle tip section,

said nozzle tip section having a generally outer annular side surface portion for submersion in the molten bath for injecting oxygen from said orifice means within said bath while cooling said nozzle surface portion by coolant in said coolant passageway means,

skull-forming prevention means carried on the nozzle tip section that is submerged in the molten bath whereby the formation of a frozen band of steel about the coolant-cooled nozzle tip section is prevented, said skull-forming prevention means comprising a plurality of raised generally vertically elongated circumferentially spaced thermal ridge means mounted on the outer surface of the nozzle tip section to define vertically extending crest and trough areas, whereby molten metal runs off the crest areas which are at higher temperatures than the trough areas where the metal solidifies preventing the formation of a continuous band of metal or skull around the submerged nozzle tip section,

each ridge means having on its crest area a substantially thick layer of refractory material to insulate the crest area of the ridge means from the interior cooling effect of the coolant within the submerged nozzle tip section thereby allowing the ridge crest area to remain warmer in the bath to prevent solidification of metal on the crest area.

3,843,106

FURNACE

Toshio Nanjyo, and Masayuki Aoshika, both of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1973, Ser. No. 351,855

Claims priority, application Japan, Apr. 28, 1972, 47-42912; May 30, 1972, 47-64168; May 30, 1972, 47-64167; Feb. 8, 1973, 48-17032

Int. Cl. F27d *1/12*

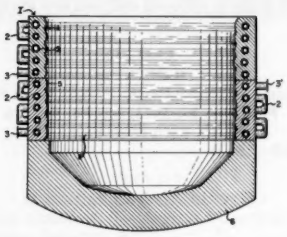
U.S. Cl. 266—43 **7 Claims**

1. A furnace wall construction for metal heating furnaces, comprising

a. a furnace bottom wall (6) containing a cavity for receiving molten metal; and

b. a furnace side wall (1) supported on said bottom wall above the level of the molten metal, said side wall including

1. at least one cast metal main body (4); and
2. a plurality of cooling tubes (2) cast integral with said main body or conducting a cooling fluid therethrough, each of said cooling tubes including horizontal portions



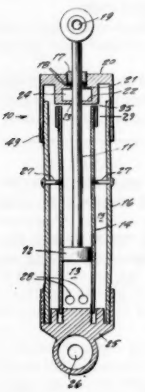
contained in said main body, the internal surface of said main body being corrugated to define for each horizontal tube portion a convex surface arranged coaxially therewith, thereby to produce a uniform cooling effect on the side wall internal surface for permitting a protective layer of splash metal to be formed thereon.

3,843,107

ADJUSTABLE DUAL ACTION SHOCK ABSORBER

Douglas R. Atkins, 74 Wayside Dr., San Antonio, Tex. 78213

Filed Feb. 9, 1972, Ser. No. 224,651
Int. Cl. F16f 9/44
U.S. Cl. 267—64 R **2 Claims**



1. An adjustable dual action shock absorber consisting of;

a. an adjustable top cap attached to an outer cylinder, said top cap being separated from the top of an inner cylinder located centrally within said outer cylinder by a baffle plate constructed on the bottom of said top cap to form a baffle gap, said baffle gap opens or constricts by adjusting said top cap to control resistance of hydraulic fluid between an inner chamber and an outer chamber, said inner and outer chambers being the areas formed within said inner cylinder and between said outer cylinder and said inner cylinder respectively,

b. an adjustable base cap attached to the lower end of said outer cylinder, the inner part of said base cap being fitted around and within the base of said inner cylinder, said inner cylinder having constructed therein base jet openings to communicate between said inner chamber and said outer chamber, that part of said base cap fitted around said inner cylinder being constructed to allow partial blockage of said base jet openings to control resistance of hydraulic fluid between said inner chamber and said outer chamber, said base cap being externally constructed for attachment to an axle assembly,

c. said inner cylinder being attached to said outer cylinder by interconnecting screws allowing said inner cylinder to move simultaneously with said outer cylinder, rotation of said outer cylinder allows said inner cylinder to alter the orifice of said base jet openings thus permitting adjustment when said base cap is firmly affixed to a vehicle,

d. a spring slat valve within a sleeve fitted around said inner cylinder to open when hydraulic fluid is entering said inner chamber and to close when hydraulic fluid is forced from within said inner chamber into said outer chamber, closing and opening of said slat valve is relative to the movement of a piston, said inner and outer chambers being suitably filled with a damping substance such as hydraulic fluid,

e. a screw threaded nut within said top cap having an opening through which a piston rod extends outwardly, said nut having within multiple washers forming a seal, the area beneath said nut being void of hydraulic fluid in the amount of the volume displaced by said piston rod and allowing for coefficient of volume expansion, said piston rod being externally constructed for attachment to a chassis,

f. said piston rod being attached to a piston within said inner chamber, said piston rod being constructed with an internal longitudinal air compression chamber, a rod being affixed to said base cap within said inner chamber, said affixed rod being inserted into said longitudinal chamber of said piston rod, said affixed rod at its upper end being provided with a series of washer type rings to provide an airtight seal preventing a mixture of air with said hydraulic fluid within said inner chamber, an air valve within said base cap, said air valve being in communication with the lower end of said affixed rod, an air passage through said affixed rod being in communication with said longitudinal air compression chamber, said affixed rod as an alternate may be constructed as a cylinder, the longitudinal center permitting compression of air there within, to allow for a relatively light weight shock absorber for large vehicles, said air compression assembly permits an increase or decrease of air pressure within said air compression chamber to assist or to form a spring action,

g. said piston rod on a downward movement compresses air within said air compression chamber, said piston simultaneously forces said hydraulic fluid from within said inner chamber into said outer chamber through said adjustable base jet openings, said hydraulic fluid simultaneously enters the upper part of said inner cylinder,

h. said piston rod on an upward movement allows air expansion within said air compression chamber, said piston simultaneously forces said hydraulic fluid from within said inner chamber into said outer chamber through said adjustable baffle gap, said hydraulic fluid simultaneously enters the lower part of said inner chamber.

3,843,108

VIBRATION AND SHOCK ISOLATED GYROSCOPE ASSEMBLY

Walter J. Krupick, Succasunna, and Theodore J. McDonough, Bloomfield, both of N.J., assignors to The Singer Company, Little Falls, N.J.

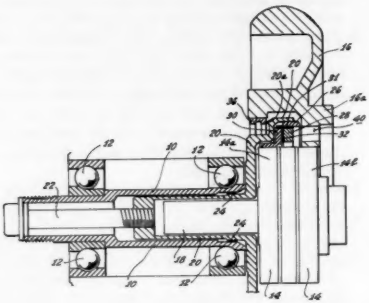
Filed Jan. 31, 1973, Ser. No. 328,389
Int. Cl. F16f 7/04
U.S. Cl. 267—137 **8 Claims**

1. In a gyroscope assembly, or the like, a drive shaft rotatable about a spin axis; a rotatable rotor coaxial with said spin axis; and a mechanism for intercoupling said drive shaft and

said rotor to provide isolation and damping of relative movement between the drive shaft and the rotor, said mechanism including:

a sleeve member coaxial with said spin axis and affixed to said drive shaft for rotation thereby, said sleeve member having an end extending into telescoped concentric radially spaced relationship around a portion of said rotor;

a first ring coaxial with said spin axis telescoped into said end of said sleeve member and surrounding said portion of said rotor;



a second ring surrounding said portion of said rotor in concentric relationship therewith and afixed thereto;

interconnecting means including a third ring concentrically disposed within said first ring and in radial facing relationship with said second ring and having elastomer sections disposed between said first and third rings and between said second and third rings, said means interconnecting said first ring and said second ring.

3,843,109

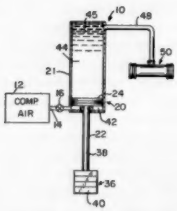
WORKHOLDING AND POSITIONING SYSTEM

Donald Bogosh, 2646 Willow, Franklin Park, Ill. 60131

Filed May 15, 1972, Ser. No. 253,344

Int. Cl. B23q *3/08;* **B23b** *31/30;* **F01b** *25/00*

U.S. Cl. 269—22 **16 Claims**



1. In a workholding system operating from a source of fluid pressure and particularly adapted to securely maintain a workpiece firmly and in a desired position to allow different operations to be easily performed upon said workpiece, and including a workholding means having a hollow sleeve with an elastomeric lining which surrounds and acts upon the surface of the workpiece to grasp and hold it, the improvement comprising pressure pump and control means having chamber means, piston means defining an expansion volume and a pressure pumping volume within said chamber means, said piston means being movable within said chamber means in response to a first pressurized fluid transmitted to said expansion volume of said chamber means by said source of fluid pressure, and biasing means adjustable to urge said piston means with a constant force to move in a direction opposite to that in which said piston means is urged by said first pressurized fluid, said chamber means having a second imcompressible fluid contained within said pumping volume thereof, said second fluid being transmitted therefrom through a second conduit means, by movement of said piston means, to said workholder means to apply a pressure controlled by said biasing means to said elastomeric lining in said workholder means to move said elastomeric lining to surround and hold said workpiece.

3,843,110

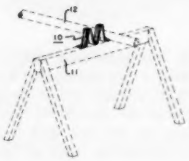
HAND VISE

James J. Smith, 502 North Puget, Olympia, Wash. 98501

Filed Apr. 27, 1973, Ser. No. 355,116

Int. Cl. B25b *1/20;* **F16l** *3/00*

U.S. Cl. 269—254 R **6 Claims**



1. A vise, comprising:

an upstanding, substantially M-shaped framework having a pair of leg portions which are inclined centrally from their respective lowermost terminal ends, and jaw portions joined at their respective uppermost terminal ends to the uppermost terminal ends of said leg portions, said jaw portions being inclined centrally from their uppermost terminal ends and being joined to each other at their lowermost terminal ends;

mounting leaves disposed in a horizontal juxtaposition from said lowermost terminal ends of each of said leg portions; and

means disposed on the upper side surfaces of said framework, for providing fractional gripping force on an object disposed between said jaw portions.

3,843,111

MULTIPLE STOP

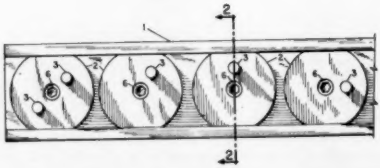
Norbert Neuhold, 16 Oaklawn Pl. S.W., Calgary, Alberta, Canada (T2V3Z1)

Filed Aug. 20, 1973, Ser. No. 380,689

Claims priority, application Canada, Sept. 7, 1972, 151113

Int. Cl. B23q *3/18*

U.S. Cl. 269—317 **1 Claim**



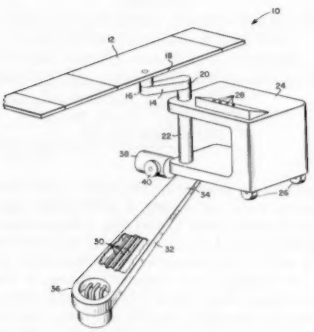
1. A gauge for use with machines for duplicating a plurality of different lengths or locations in material per set up, comprising in combination a length of channel including an open front side, a plurality of pinguides slideably engageable within said channel, a set screw in said pinguide reacting between

said pinguide and front side of channel to detachably and adjustably clamp said pinguides in said channel, said pinguides include at least one retractable pin mounted therein, a spring in said pinguide for said pin, normally biasing said pin to a position extending from said front side of channel but permitting said pin to move into said pinguide by compressing said spring when material is pushed against said pin, said pins reposition themselves automatically when material is removed, said pinguides being rotatable through 360 degrees within said channel for position adjustment of said pins.

3,843,112
SURGICAL PATIENT SUPPORT

Robert Louis McDonald, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,594
Int. Cl. A61g *13/00*
U.S. Cl. 269—322 **3 Claims**



1. A mobile surgical patient support for use in an operating room or the like, comprising:

a. a service console adapted for movement along a floor surface, said console having a plurality of outlets for utility services and the like;

b. a horizontal support arm having one end pivoted to said console to permit movement of said support arm in a horizontal plane;

c. a surgical table pivotably supported from said console in cantilever fashion on the outwardly extending end of said support arm, said support arm being pivoted to the bottom of said table adjacent an edge thereof to permit movement of said surgical table in a horizontal plane about said support arm and console to various adjusted positions about said console;

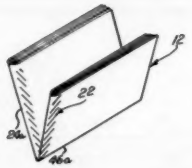
d. a radial arm having one end journaled adjacent floor surface and a second end pivotally connected to said console, said console being movable along the floor surface through an articulate path of travel of a radius of which is said radial arm and said console being movable in a horizontal plane about said radial arm second end to various adjusted positions with respect to said radial arm and

e. a plurality of utility service lines extending through said radial arm for delivering utilities from a source remote from said radial arm to said outlets on said console.

3,843,113
MULTI-PAGE SIGNATURES AND APPARATUS AND METHOD FOR PRODUCING SAME

Robert H. Schaffer, Mystic, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Continuation of Ser. No. 161,758, July 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 27,568, April 13, 1970, abandoned. This application Aug. 6, 1973, Ser. No. 385,983
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 **3 Claims**



1. A method of producing a multi-page sheet material product comprising the steps of:

advancing unslit sheet material to a slitting station,

forming a first transverse row of short, closely spaced parallel slits in the sheet material, which slits are angled to the direction of advance of the sheet material with first ends of the slits in the material lying on a first line transverse to the direction of advance of the material,

leaving a longitudinally extending unslit area adjacent the first tranverse line,

forming a continuous fold in the unslit area of the sheet material closely adjacent to and spaced from the first ends of the slits,

said step of forming a continuous fold including the step of folding the unslit area along a line extending parallel to and spaced from said first line and forming an uninterrupted and slit-free first folded edge extending between opposite edge portions of the sheet material and spaced from all slits in the sheet material,

advancing the sheet material with said uninterrupted and slit-free folded edge leading,

engaging said continous uninterrupted and slitfree folded edge with register stops to register the material at a second folding station, and

creating a second fold at right angles to said continuous unslit first transverse folded edge while said continuous unslit first transverse folded edge is maintained against the register stops.

3,843,114
APPARATUS FOR AUTOMATIC TAKEUP AND RELEASE OF SHEETS

Togo Kojima, and Shinobu Utashiro, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 8, 1973, Ser. No. 339,371
Claims priority, application Japan, Mar. 11, 1972, 47-24429; Sept. 19, 1972, 47-93853
Int. Cl. B65h *5/12*
U.S. Cl. 271—3 **15 Claims**

1. An apparatus for automatic takeup and release of sheets which comprises:

a base frame;

a main shaft rotatably supported on said base frame;

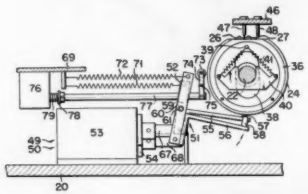
means for driving said main shaft;

a sheet takeup drum coaxially fixed to said main shaft and rotatable about the axis of said shaft;

first sheet holding means disposed close to the outer peripheral surface of the drum to hold the forward end of the sheet on the drum surface when said sheet is taken up thereon, and to release said forward end when the sheet is taken off the drum;

second sheet holding means provided in proximity to the outer peripheral surface of the drum to press the sheet tightly to the drum sheet and then hold the rear end of the sheet on the drum surface when the sheet is taken up thereon and to release said rear end when the sheet is removed from the drum;

said first and second sheet holding means being first and second bars extending parallel with the axis of said drum; pairs of first and second bar supports for supporting said



first and second sheet holding bars at both ends of said drum, respectively, said supports being movable in the radial direction relative to said shaft and also rotatable independently of said drum about said shaft;

means for urging said first and second bar supports toward one side of said drum in said radial direction for pressing said first and second sheet holding bars against the outer peripheral surface of said drum;

a shift mechanism for moving said first and second bar supports toward the opposite side of said drum in said radial direction for releasing said first and second sheet holding bars from said drum; and

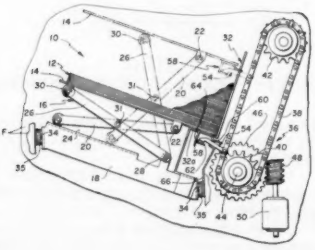
means for delivering the sheet from the drum.

3,843,115

ELEVATOR APPARATUS

Anthony P. Di Fulvio, and Matthew J. Russel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,704
Int. Cl. B65h *1/14*
U.S. Cl. 271—147 **7 Claims**



1. Apparatus for raising and lowering a platform guided for movement in a predetermined orientation along a predetermined path, said apparatus including:

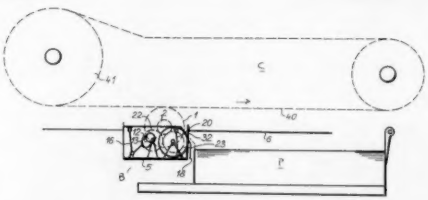
lift means movable along a path spaced from and generally parallel to the predetermined path of said platform; and coupling means for transmitting movement of said lift means to said platform, said coupling means comprising an elongated member pivotally connected to said lift means, said elongated member having a first portion readily detachably engageable with said platform for transmitting a lifting force thereto upon movement of said lift means, and a second portion, spaced from said first portion, readily detachably engageable with said platform for limiting the pivoting movement of said member relative to said lift means tending to result from the application of such lifting force.

3,843,116

APPARATUS FOR THE ADJUSTMENT OF PAPER SHEETS

Jaroslav Jiruse, Blansko, Czechoslovakia, assignor to Adamovske Strojirny, narodni podnik, Adamov, Czechoslovakia

Filed May 21, 1973, Ser. No. 362,486
Claims priority, application Czechoslovakia, May 24, 1972, 3536-72
Int. Cl. B65h *9/14, 31/36*
U.S. Cl. 271—183 **7 Claims**



1. Apparatus for positioning sheets on a pile after printing in a printing press comprising a continuous conveyor for carrying successive sheets to said pile, a frame mounted adjacent said pile and said conveyor, at least one perforated drum located in said frame adapted to be connected to a source of vacuum for braking said conveyed sheets, a front layer adapted to engage the edge of said conveyed sheet and drive means for synchronously rotating said drum and oscillating said front layer to brake successive sheets and adjust their position on said pile comprising a first shaft journaled in said frame, means connecting said conveyor to rotate said first shaft jointly on movement of said conveyor, a pin extending axially from one end of said first shaft eccentric to the longitudinal axis thereof, a forked member linked to said front layer surrounding said eccentric pin and oscillating on rotation thereof, a second shaft extending freely through said drums and journaled in said frame, means connecting said first and second shafts for conjoint rotation, bearing means for freely mounting said drum about said second shaft, means interconnecting said second shaft and the periphery of said drum for causing rotation of said drum conjointly with the rotation of said second shaft and a four bar linkage supporting said front layer, one of said bars being movable by said forked member enabling the reciprocation of said front layer in a parallel arrangement on movement of said forked member.

3,843,117

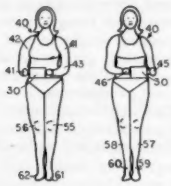
EXERCISING METHOD FOR REDUCING VOLUME OF HUMAN TISSUE IN REGIONS OF THE ABDOMEN

Lorene M. Johnson, Rt. 4, Hereford, Tex. 79046

Continuation-in-part of Ser. No. 196,958, Nov. 9, 1971, Pat. No. 3,756,592. This application July 16, 1973, Ser. No. 379,255
Int. Cl. A63b *23/02*
U.S. Cl. 272—57 R **6 Claims**

1. Process for reducing the volume of human subcutaneous extramuscular semi-fluid tissue in umbilical and hypogastric

regions of the abdomen which comprises the steps of repeatedly and continuously applying to the hands at elbow level with the forearms bent inwardly at an angle to their respective upper arms and the hands at elbow level alternating leftward and rightward sharp impact while the feet and neck and collar-



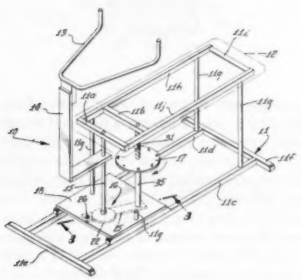
bone are fixed in position and causing the hips to rotate and said semi-fluid tissue to jolt in alternating leftward and rightward direction with sufficient impulse to distend and produce a palpable protrusion in the skin immediately overlying such semi-fluid tissue and express liquid from such tissue.

3,843,118

ISOTONIC EXERCISING APPARATUS HAVING SELECTIVE FRICTION RESTRAINT

Robert F. Annas, Arcadia, and Vincent Hinsberger, Los Angeles, both of Calif., assignors to Paramount Health Equipment Corp., Los Angeles, Calif.

Filed July 28, 1971, Ser. No. 166,670
Int. Cl. A63b *21/00*
U.S. Cl. 272—58 **11 Claims**



1. In an isotonic exercising apparatus wherein a user moves part of his body against a yieldable resistance;

a. a frame having a plate attached thereto,

b. a shaft journaled to said frame for rotation only about said shaft axis and for limited axial translation with respect to said frame, said shaft having attached thereto an appurtenance adapted to be engaged by said body part,

c. a planar brake shoe attached to said shaft and having a friction surface cooperating with said plate to provide said yieldable resistance to rotation of said shaft by said user, and

d. a lever pivoted on the frame on an axis located laterally of said shaft, said lever extending transverse to said shaft and having a part engageable with the shaft for exerting an axial force on the shaft;

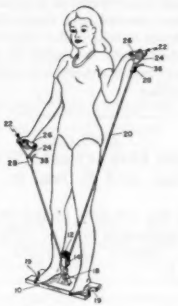
e. adjustable screw means operative between the frame and said lever and located laterally of said shaft to control the magnitude of the axial force exerted by said lever and, thereby, to control the contact pressure between said brake shoe and said plate and the magnitude of said yieldable resistance.

3,843,119

EXERCISING MACHINE

Richard P. Davis, 4485 Home Ave., San Diego, Calif. 92105

Filed Aug. 13, 1973, Ser. No. 388,115
Int. Cl. A36b *21/00*
U.S. Cl. 272—79 R **3 Claims**



1. Improvements in an exercising machine or the like having a releasibly anchored sheave and a flexible cable entrained around said sheave so that the two end portions of the cable can be separately pulled by the two hands of the user, said improvements comprising:

handgrip-stirrup assemblies on the end portions of said cable, each assembly including:

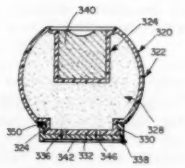
a returned cable portion defining a loop; quick-release securing means adjustably fastening said returned cable portion to an adjacent portion of the cable comprising a body having a bore therethrough and a vent leading from said bore to the exterior of said body; said returned cable portion and said adjacent portion of the cable extending through said bore and the former having a diverted loop portion thereof extending outwardly through said vent with a terminal portion of the cable introduced into said diverted loop portion to constitute a simple knot easily untied by an intentional pull on said terminal portion.

3,843,120

MARKING APPARATUS FOR TEACHING A POOL OR BILLIARD GAME

Vero Ricci, Collingswood, N.J., assignor to Aggogle Inc., New York, N.Y.

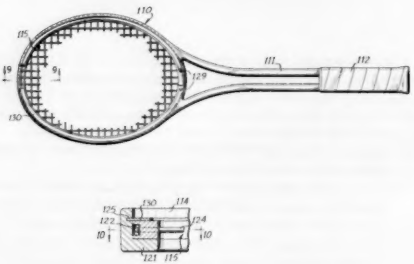
Filed May 24, 1973, Ser. No. 363,616
Int. Cl. A63d *15/00, 15/16*
U.S. Cl. 273—2 **6 Claims**



1. Apparatus for teaching a pool or billiard game wherein a cue ball is propelled against an object ball comprising a generally spherical target member having the general size and configuration of said cue ball, support base means formed on

said member for stabilizing the target member on the surface of a pool table, said base means being so dimensioned that the equator of said target is spaced from said surface a distance equal to the radius of said cue ball, no portion of said apparatus projecting outwardly in a horizontal direction from the geometric center thereof a distance greater than the radius of said cue ball, a powder receiver chamber formed in said member, depending powder dispenser orifice means formed on the under surface of said target member in predetermined relation to the vertical center thereof, and means for conveying powder from said chamber to said orifice responsive to manipulation of said member while the latter is supported on said surface, thus to form powder marks on said surface in registry with said orifice means.

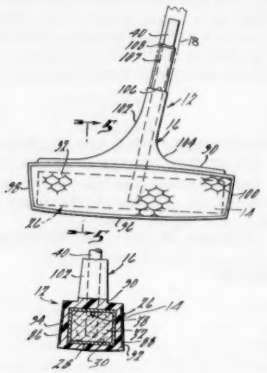
3,843,121
RACKET WITH REPLACEABLE STRING FRAME
Thomas B. Edlefsen, 1315 N. June St., Hollywood, Calif. 99028
Division of Ser. No. 129,059, March 29, 1971, Pat. No. 3,707,288. This application Mar. 6, 1972, Ser. No. 298,999
Int. Cl. A63b *51/00*
U.S. Cl. 273—73 L **4 Claims**



1. A racket having a replaceable string-frame, said racket including a shank, a handle at one end of said shank and a racket-frame at the opposite end of said shank and fixed thereto, said racket-frame being configured to hold said string-frame, said string-frame carrying a string playing surface, said string-frame having substantially the same configuration as said racket-frame, said racket-frame having an upwardly extending flange means substantially perpendicular to the plane of said playing surface and an inwardly extending flange means, the inner periphery of said racket-frame defining an opening therein, said inwardly extending flange extending into said opening to receive said string-frame, and retaining means to secure said string-frame within said racket-frame, said retaining means being removably located on said upwardly extending flange means and extending inwardly therefrom and being opposite said inwardly extending flange means and spaced therefrom a distance substantially equal to the thickness of said string-frame.

3,843,122
GOLF PUTTER HEAD
Raymond J. Florian, 14440 Elwell, Belleville, Mich.
Filed Dec. 27, 1971, Ser. No. 211,954
Int. Cl. A63b *53/02*, *53/04*
U.S. Cl. 273—81 A **8 Claims**

1. A golf putter including a putter head and an axially extending shaft having a grip portion at the upper end and an inwardly extending passage located at the lower end, said putter head having an upper surface, a sole surface, toe and heel portions and comprising a core structure including a sleeve of generally rectangular shaped cross-section having an upper wall, a lower wall, end portions and two side walls and having an internal passage which extends completely therethrough between said end portions, means for filling said internal passage including a block having a cross-section conforming to the cross-section of said internal passage and located therein, said block being of a light density material, first and second spaced inserts in said internal passage on opposite ends of said block and corresponding to said end portions of said sleeve, said inserts each being of a preselected weight to provide a predetermined weight to said putter head, said inserts being of substantially greater density than said block, weighting means located in the upper end of said shaft for counter-balancing said predetermined weight of said putter head and providing a weight balance point in proximity to the lower end of said grip portion, said core structure further including a downwardly extending, vertically inclined passage, said inclined passage being located substantially centrally between both said spaced inserts and said side walls of said sleeve and extending through the upper wall of said sleeve and



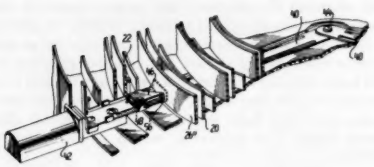
at least partially into said block, a rod formed from a thermally conductive material and having a first end supported in said downwardly extending passage and an opposite end extending outwardly from the upper wall of said sleeve and connectably and telescopically located in said inwardly extending passage formed in said shaft, a plastic shell formed substantially entirely about said core structure and including a neck formation formed on the upper surface of said shell and at least a portion of said rod, said neck formation including a shoulder spaced between said upper surface of said shell and said opposite end of said rod for axially locating said lower end of said shaft relative to said rod, said neck formation and said shaft being located substantially centrally of said head in both a longitudinal and transverse direction, said head being substantially symmetrically configured about the neck, rod and shaft assembly in both a longitudinal and transverse direction, and a resilient striking face connected to at least one side surface of said shell.

3,843,123
RACETRACK AMUSEMENT DEVICE
Yukio Masuda, Sumiyoshi 1-7-7, Soka, Japan
Filed Oct. 2, 1972, Ser. No. 294,467
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 B **5 Claims**

1. As amusement device, comprising:

a frame, a plurality of bands, means mounting said bands within said frame permitting same to move in spaced relationship to each other, each of said bands being provided with a magnet, operating means associated with each of said bands for individually moving same compris-

ing an arm, means mounting said arm to said frame transversely of said band to move from side to side, and a wedge element mounted to rotate about an axis on said arm and means normally urging said wedge element into engagement with said band such that as said arm is moved in one direction said wedge element tightly grips said band moving same while during the return movement of said arm in the opposite direction the grip of said wedge



element is released at which time said band remains stationary, said axis being parallel to the plane of the surface on said band at the point of engagement of said band by said wedge;

a top mounted upon said frame; and

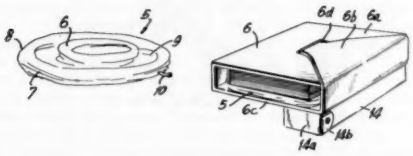
a plurality of figurines corresponding to said members and resting upon said top, each of the figurines being provided with a magnet positioned above said magnet of its corresponding band.

3,843,124

INFLATABLE TARGET AND FOLDABLE SCORING APPARATUS

Billy W. Davis, 1703 Trussell Rd., Alex City, Ala. 35010

Filed Feb. 1, 1973, Ser. No. 328,500
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R **3 Claims**



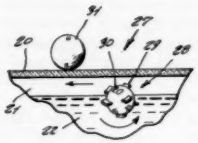
1. A bucket ball game comprising in combination: an upright receptacle having an opening defined therein for receiving tossed objects; a plurality of tossable objects each of a size receivable into said opening; at-least two sets of a plurality of numbered cards each having differing numerals, each of said sets being a duplicate of the other set, said numbered cards of each set being arranged from low to high, each consecutive card being representative of an additional scoring by successfully having tossed at least one of said objects into the receptacle opening, said numbers ranging from zero upwardly and in which larger ones of said numerals are multiples of the smallest real-number numeral greater than zero; said objects being visually distinctive and corresponding in number to the number of said sets of cards; a card-mounting board means onto which each of said sets of cards is separately mounted for flipping over from its respective set while remaining mounted in the flipped state on the board means; said receptacle being an inflatable element; and said board being foldable and lockable into an enclosing container state in which said tossable objects, said mounted sets, and said receptacle in a deflated state can be stored.

3,843,125

GAME HAVING MAGNETICALLY COOPERATING PROFECTILES AND FLOATING SCORING ELEMENTS

Randy J. Loose, and George Specter, both of c/o 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Sept. 4, 1973, Ser. No. 394,162
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R **3 Claims**



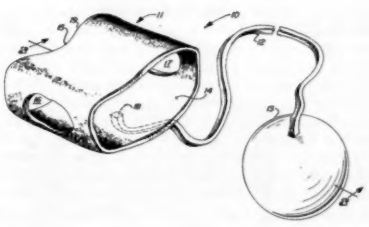
1. A sticky pitch game comprising a tray having a transparent top plate with raised surrounding edges, including a compartment below said plate partially filled with liquid having a surface parallel to and spaced from the plate, in combination with a plurality of magnetic surface elements having numbers thereon disposed to be viewed through said transparent plate, said elements being buoyantly supported in the liquid wherein the elements project into space betweeen the plate and liquid to be closely adjacent the plate including a magnetic piece that is tossed on to the plate for attracting the most proximate element to said piece.

3,843,126

TETHERED BALL AND RESILIENT COVERING FOR BOTH RIGHT AND LEFT HANDS

Leon D. Bandy, 1722 E. Dobbins Rd., Phoenix, Ariz. 85040

Filed Nov. 5, 1973, Ser. No. 412,683
Int. Cl. A63b 71/02
U.S. Cl. 273—95 A **2 Claims**



1. An exercise and recreational device comprising in combination:

a glove formed of resilient material for covering only the palm and back of a hand,

said glove comprises an elongated, open-ended, cylindrically shaped, resilient member having two openings at diagonally positioned points for thumb holes, one of which is used with a right-handed user and the other of which is used with a left handed user,

a rubber band attached at one end to the palm of the glove, and

a rubber ball attached to the other end of the rubber band, whereby

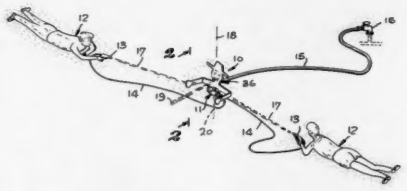
the user may grasp freely with his gloved hand the ball and throw it for movement away from him in or out of his line of sight with freedom of the fingers of the gloved hand to catch the tethered ball at will.

3,843,127

WATER GUNS AND WATER EMITTING TARGET

James E. Lack, 1828 Thelborn, Apt. No. 15, West Covina, Calif. 91722

Filed Aug. 13, 1973, Ser. No. 388,327
Int. Cl. A63b 71/02
U.S. Cl. 273—101 **14 Claims**



1. A game toy comprising:

a plurality of units to be positioned at different first locations and adapted to be controlled by different players respectively and operable to emit individual first streams of water from said locations toward a predetermined other location;

a remotely controlled water emitting target structure to be positioned essentially at said other location; and

means mounting said target structure for rotary movement between positions in which it aims water generally toward said different units respectively;

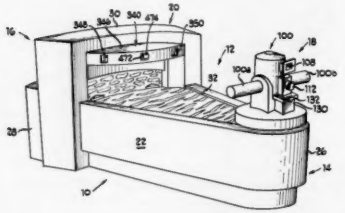
said target structure having a portion positioned to be hit by said first streams in a manner causing rotary movement of said structure between said positions of aim toward said two units respectively in accordance with the control of said first streams by the players.

3,843,128

TARGET GAME

Gunars Licitis, Lombard, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 335,764
Int. Cl. F41j 9/00
U.S. Cl. 273—101.2 **49 Claims**



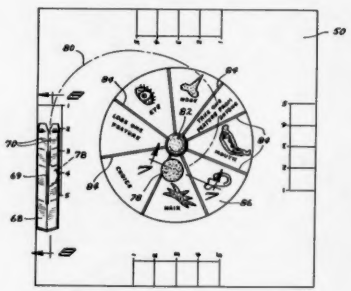
1. A target game, comprising: means defining a housing having a sighting area and a target area spaced therefrom; a sighting and firing assembly including an aiming portion located at said sighting area; a target field located at said target area; at least one target located adjacent to the target field and mounted for movement through a path of travel across the target field, said target being mounted on a movable target support including a movable retaining member, being movable between a support position, wherein said target support is held in a first position, to movement away from said support position, wherein said target support is free to move away from said first position through a path of travel simulating target intercept; a missile firing mechanism associated with said sighting and firing assembly and including a missile assembly having a target engaging portion, said missile assembly being mounted for movement from a retracted position to movement to a target intercept position wherein said target engaging portion generally intercepts the path of travel of the target in the area of the target field, engagement of said missile engaging portion by said target engaging portion causing movement of said retaining member, thereby permitting movement of said yieldable support through a target intercept path of travel; and target reorientating means in the target path of travel for returning said target support to said first position and returning said retaining member to said support position, said target reorienting means including an upwardly inclined track having a lower and an upper end, and wherein said target support is mounted for generally vertical to and fro movement with the target being mounted for movement across said track from the lower and toward the upper end during which said support is moved upwardly to the first position.

3,843,129

BOARD GAME WITH GRAVITY PROJECTOR AND PROJECTILE THEREFOR

Wilson G. Dietrich, Rt. 5, Faribault, Minn. 55021

Filed Nov. 18, 1971, Ser. No. 200,117
Int. Cl. A63f 7/02, 7/10
U.S. Cl. 273—120 R **4 Claims**



1. In a board game,

a. a board providing a flat horizontal upper surface having indicia thereon defining various target areas,

b. an elongated upwardly opening trough supported in inclined position on the surface and being independent of the board for movement to various positions thereon,

c. a roller having a flat circular side and gradually diminishing in diameter therefrom in a uniform manner,

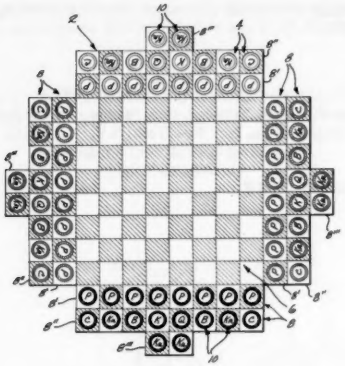
d. said trough having one elongated wall extending therealong in vertical upright position and a second elongated wall extending longitudinally parallel to said one wall and extending laterally outwardly and upwardly to one side and from the bottom of said one wall whereby the roller may be rolled down the trough about the center axis of its flat side with said side moving flush along said one wall and with the roller portion having the gradually diminishing diameter rolling along the second wall until the roller departs from the lower end of the trough onto the board upper surface.

3,843,130

CHESS GAME FOR TWO, THREE OR FOUR PLAYERS

Karl R. Whitney, Jr., 25605 S.E. 242nd St., Maple Valley, Wash. 98038

Filed May 29, 1973, Ser. No. 364,737
Int. Cl. A63f 3/02
U.S. Cl. 273—131 KP 3 Claims



1. A chess game for two, three or four players comprising a relatively enlarged checkerboard having a basic playing area consisting of 64 playing squares arranged in 8 bilaterally, alternately colored, successively adjoining rows having 8 playing squares per row, and an additional peripheral playing area around the basic playing area, consisting of three additional rows adjoining each side of the basic playing area, the innermost and intermediate of which additional rows consist of 8 playing squares apiece and are coextensive with the respective sides of the basic playing area, and the outermost of which additional rows consist of two playing squares apiece and are coextensive with the middlemost squares of the intermediate rows, and a relatively enlarged set of conventional chess pieces initially disposed on the additional peripheral playing area of the checkerboard for each player, consisting of the usual 8 visually distinguishable royalty pieces initially disposed on the squares of the intermediate additional row on one side of the basic playing area, 8 visually identical pawns initially disposed on the squares of the innermost additional row on said one side of the basic playing area, and two additional said royalty pieces initially disposed on the squares of the outermost additional row on said one side of the basic playing area, and selected from the group consisting of queens, knights, bishops and castles, said royalty pieces on the aforesaid intermediate additional row being arranged in conventional order end to end of the row, with the king and queen being disposed on the aforesaid middlemost squares of the row, and all of said royalty pieces and said pawns being permitted to move on the checkerboard in conventional fashion.

3,843,131

BOARD GAME APPARATUS

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros. Inc., Elmwood Park, N.J.

Filed Jan. 31, 1974, Ser. No. 438,485
Int. Cl. A63f 3/00
U.S. Cl. 273—134 G 5 Claims

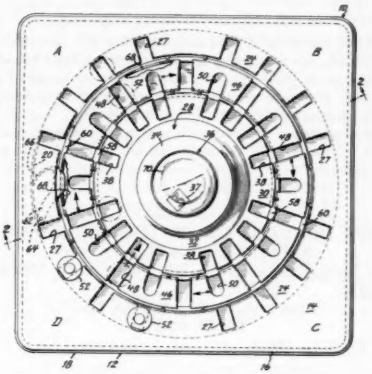
1. A game board device with slidably attached playing pieces comprising:

a. a casing having a substantially planar top panel, said top panel provided with a centrally disposed circular aperture and a plurality of slot-shaped apertures communicating with said circular aperture and radially extending outwardly therefrom, said slot-shaped openings being of equal length and closed at their ends distal the central opening,

b. a centrally disposed circular wall projecting downwardly from the bottom surface of the top panel, said wall having an internal diameter equal to the distance between the closed ends of any two diametrically opposed radially extending slot-shaped apertures in said top panel,

c. a circular bottom planar panel parallel to the top panel and affixed to the edge of the circular wall distal the top panel, said circular wall, bottom panel and central opening providing a centrally disposed well in the casing,

d. a stationary disc member having a diameter less than that of the centrally disposed circular aperture in the top panel of the casing and disposed within the casing well and affixed to the bottom panel, said disc member having a central bore therethrough and a substantially planar outer peripheral surface level with the casing top panel, said outer peripheral surface provided with a plurality of



slot-shaped apertures oriented radially therethrough, said slot-shaped apertures closed at their ends proximate the central bore and open at the peripheral edge of the disc,

e. a manually rotatable ring secured within the central well of the casing and encircling the stationary disc and slidably supported by the bottom panel, said rotatable ring having a top planar panel flush with the casing top panel and the stationary disc outer peripheral surface, said rotatable ring top panel provided with a plurality of equiangularly spaced radial slots, whereby said radial slots are aligned with and communicate with slots in the stationary disc and slots in the casing top panel when the rotatable ring is rotated to indexed positions,

f. a plurality of playing pieces slidably secured to the game board device and capable of being slidably transferred to and from said casing top panel and rotatable ring and to and from said rotatable ring and stationary disc when the rotatable ring is indexed, and

g. a chance selector mounted centrally of the stationary disc member.

3,843,132

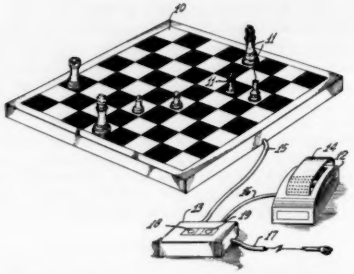
BOARD GAME MOVE RECORDING SYSTEM

David E. Ferguson, 1249 Tigertail Rd., Los Angeles, Calif. 90049

Filed Apr. 19, 1973, Ser. No. 352,566
Int. Cl. A63f 3/02
U.S. Cl. 273—136 A 15 Claims

1. A system for automatically recording moves on a game board, comprising:

first electrical means positioned under respective squares of a game board, for sensing removal of game pieces from and replacement of game pieces on the squares and for developing successive signals indicative of removal, replacement and square location;



second electrical means coupled with said first electrical means, for identifying specific moves defined by rules of the game from the successive signals developed by said first electrical means, and developing further signals indicative of the identified moves; and

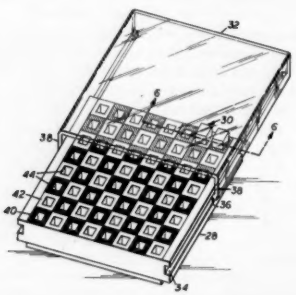
printing means coupled with said second electrical means for producing a readable record of the moves of the game.

3,843,133

GAME APPARATUS FOR PLAYING AND RECORDING SUCCESSIVE PLAYS IN A GAME

Paul Douglas Brown, 1011 N.E. 141st, North Miami, Fla. 33161

Filed Sept. 4, 1973, Ser. No. 394,219
Int. Cl. A63f *3/02*
U.S. Cl. 273—136 R **13 Claims**



1. A game apparatus for playing and recording successive plays in a game comprising, in combination:

a. a game-board (**28**) having playing areas (**40** & **42**) marked thereon,

b. said game-board including contact means (**46** & **48**) providing game-board playing areas identifying and recording indicia located on the bottom thereof,

c. a vertical opening (**44**) located in each playing area for receiving a playing piece (**30**),

d. playing pieces (**30**) each having an identifying head portion (**52**) disposed above the game-board and reduced shank means (**50**) to extend down through one of said vertical openings (**44**), each said vertical opening having a diameter smaller than said identifying head portion (**52**),

e. said shank means (**50**) including a contact means (**54** & **56**) providing identifying and recording indicia located on the bottom thereof,

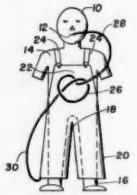
f. cover means (**32**) removably mounted (**34, 36**) on said board (**28**) to hold said playing pieces (**30**) in their lowermost position with their recording indicia (**54, 56**) and said game-board recording indicia (**46, 48**) in the same plane permitting said game-board recording indicia and said pieces recording indicia (**54, 56**) to simultaneously engage with an ink pad means (**26**) or a recording sheet (**20**).

3,843,134

KNOT UNTYING STRING PUZZLE

Amadeo T. Vallejo, Trinidad, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 4, 1974, Ser. No. 447,544
Int. Cl. A63f *9/08*
U.S. Cl. 273—153 R **4 Claims**



1. A puzzle comprising:

a simulated human figure having a head, body and legs are not removable;

overalls detachably secured to the body having individual trouser legs, a front bib extending upward from the waist and rear disposed straps which extend upward and over the shoulders to be detachably secured to the top of the bib; and

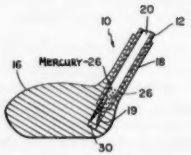
an elongated length of string having a knot disposed in front of the waist with one end secured to the head and the other end secured to a trouser leg, the purpose of the puzzle being to remove the knot without disconnecting the string at either end or removing the overalls.

3,843,135

GOLF CLUB WITH SHIFTABLE MERCURY MASS

Harry E. Andrews, Bloomfield Hills, Mich., assignor to L. P. Andrews & Co., Incorporated, Hunington Woods, Mich.

Filed Nov. 6, 1972, Ser. No. 303,696
Int. Cl. A63b *53/08*
U.S. Cl. 273—170 **1 Claim**



1. A golf club comprising an elongated shaft and a head at one end of said shaft, an elongated passage extending lengthwise within said shaft and terminating in said head, mercury disposed in said passage and capable of moving freely from one end to the other under the influence of gravity and centrif-

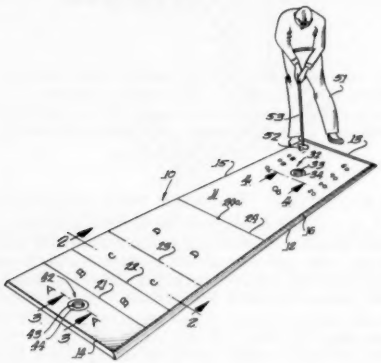
ugal force, and a mercury deflector at the end of said passage in said head, said deflector being in the form of a pin of integral one-piece construction having a cylindrical base portion substantially filling said passage at the head end thereof and a projection portion emanating from said base portion for a length greater than said base portion, said projection portion being of substantially cone-shape having a substantially uniform concave tapering from said base portion toward the end of said passage opposite said head to a substantially sharp point on the longitudinal center line of said passage so as to deflect and disperse the mercury laterally in all directions.

3,843,136

GOLF PRACTICE AND AMUSEMENT APPARATUS

Frederick L. Buenzle, 735 Foresteria Dr., Apt. 1, Lake Park, Fla. 33403

Filed Sept. 17, 1973, Ser. No. 398,244
Int. Cl. A63b 69/36
U.S. Cl. 273—176 F 3 Claims



1. A portable and compact golf practice and amusement apparatus wherein the players use regular golf balls and conventional type golf putters, comprising:

an elongated playing mat of flexible resilient material having an upper surface defining a putting surface having characteristics simulating an actual putting green as to drag and resistance to the rolling of a golf ball thereacross, and a bottom surface adapted to be laid atop a floor, carpet, lawn and the like, the mat having a front edge, a back edge parallel to and longitudinally spaced from the front edge, and a pair of transversely spaced apart longitudinally extending side edges interconnecting the opposite ends of the front and back edges respectively;

a first opening located in the back end portion of the mat, centrally thereof, and extending completely therethrough, the opening spaced a slight distance inwardly from the back edge of the mat;

a second opening located in the front end portion of the mat, centrally thereof, extending completely therethrough, and spaced inwardly from the front edge of the mat;

a first golf ball trapping and receiving cup adapted to fit into and be retained in the first opening, the first cup having cylindrical vertically extending side walls of a length less than the thickness of the mat and terminating in a closed bottom end and an open top end, the exterior diameter of the side walls being less than the diameter of the first opening such that the cup may be axially inserted thereinto, and an annular ring like flange extending completely about the cup side wall top edges and projecting outwardly therefrom to support the cup in the first opening with the flange portion and cup opening lying substantially in the plane of the upper mat surface to permit the entry of a properly aimed golf ball which is properly putted along the upper surface thereinto without affecting the course of travel of the golf ball into the cup;

a second golf ball trapping and receiving cup adapted to fit into and be retained by the second opening, the second cup having vertically extending cylindrical side walls terminating in an open topped end and a closed bottom end, the side walls extending for a length less than the thickness of the mat, the exterior diameter of the side walls being less than the diameter of the second opening such that the cup may be axially inserted into the second opening, and an annular ring like flange member extending completely about and connected to the top edge of the side walls and projecting outwardly therefrom to support the second cup in its respective second opening with the flange member and cup opening lying substantially in the plane of the upper mat surface to permit the entry of a properly aimed golf ball which is properly putted along the upper surface thereinto without affecting the course of travel of the golf ball into the cup;

the first cup being of a smaller inner diameter than the inner diameter of the second cup with the first cup being located nearer the back edge of the mat than the second cup is to the front edge of the mat in order to increase the difficulty in putting a golf ball into the first cup without the golf ball going off of the mat and the player being penalized accordingly;

the depth of both the first cup and the second cup being shallow relative to the diameter of a conventional golf ball to permit a putted golf ball to run through the cup rather than be trapped therein should the golf ball be putted too hard by the player for the distance to the cup;

a first plurality of longitudinally spaced apart first shot tee-off position markers disposed intermediate the second opening and one side edge of the mat and extending in longitudinal alignment from a position nearest the mat front edge to a position on the opposite side of the second opening;

a second plurality of longitudinally spaced apart first shot tee-off position markers disposed intermediate the second opening and the second side edge of the mat, the markers disposed in longitudinal alignment and extending from a position nearest the mat front edge to a position on the opposite side of the second opening;

the second plurality of first shot tee-off position markers each being transversely aligned with an associated one of the first plurality of spaced apart first shot tee-off position markers;

a further first shot tee-off position marker disposed centrally of the mat upper surface intermediate the first and second plurality of position markers and spaced slightly rearwardly of the second opening;

each of said first shot tee-off position markers simulating various tees of a real golf course;

each of said first shot tee-off position markers being appropriately identified by numerical marking indicia defining a predetermined numerical sequence of use of a player of each marker;

a plurality of transversely extending longitudinally spaced apart lines formed integrally on the upper mat surface dividing the complete back end portion of the mat into four adjacent regional sections each being disposed at a successively longer distance from the second opening; and

marking indicia associated with each of the regional sections and formed integral with the upper mat surface to identify each regional section to permit a player to position a golf ball on a selected first shot tee-off position marker and proceed to putt on the mat in a competitive or practice manner utilizing the first and second cup and the marking lines and regional sections to simulate play of the game of golf.

3,843,137
SOUND-RECORDING APPARATUS

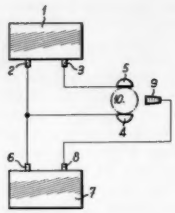
Antoinette Froidevaux, 5, rue Etienne-Dumont, Geneva, Switzerland

Filed June 13, 1972, Ser. No. 262,314

Claims priority, application Switzerland, June 18, 1971, 8897/71

Int. Cl. G11b *13/00, 5/80*

U.S. Cl. 274—1 R **1 Claim**



1. Musical instruction and entertainment apparatus comprising in combination, a two channel sound reproducing device one of said channels reproducing only the vocal part of a musical composition, the other of said channels reproducing only the instrumental accompaniment, outlet means connected to each of said channels, a sound recording device including two inlet members, a microphone connected to one of said inlet members, the other of said inlet members connected to said outlet means of the channel reproducing only the musical accompaniment, a pair of earphones, one of said earphones connected to the outlet means of the channel reproducing only the vocal part of the musical composition, the other of said earphones connected to the outlet means reproducing only the instrumental accompaniment, whereby the user of the apparatus can listen to the vocal part of the musical composition through one earphone and the instrumental part of the musical composition through the other earphone and sing into the microphone so that the recording device receives both the instrumental part of the composition and the singing of the user simultaneously, thus permitting the user to substitute his own voice for the voice of the original vocalist.

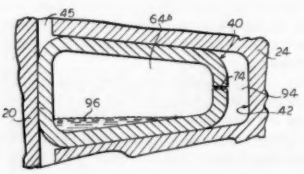
3,843,138
SHEET METAL COMPRESSION RING

David A. Cobb, Hazelcrest, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 24, 1972, Ser. No. 309,035

Int. Cl. F16j *9/22*

U.S. Cl. 277—22 **13 Claims**



1. Split piston ring of hollow construction for internal combustion piston engines, comprising a closed shell of sheet metal bent into a tubular generally uniform cross section;

said shell presenting respective thin side walls at the face, at the back, and at the top and bottom sides, and having a nearly closed gap in the bent sheet metal located in one of said sides; and

a weld effective in said gap to close the cross section, said weld extending for the circumferential length of the ring, sealing across the gap and sealing off the closed shell air tight.

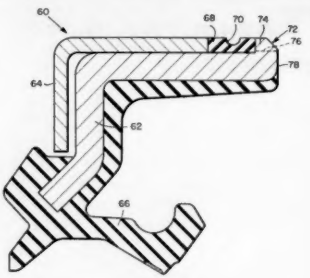
3,843,139
OIL SEAL

Edward J. Messenger, Longview, Tex., assignor to Garlock Inc., Palmyra, N.Y.

Continuation-in-part of Ser. No. 100,924, Dec. 23, 1970, abandoned. This application July 24, 1972, Ser. No. 274,161

Int. Cl. F16c *33/76*

U.S. Cl. 277—37 **4 Claims**



1. In a seal including a sealing element, a relatively rigid, inner annular shell including a radially outwardly extending flange, a less rigid outer annular shell that is a slip fit over the inner shell, an auxiliary O.D. resilient gasket positioned on the O.D. of the inner shell and confined thereon between said flange and said outer shell, said gasket being radially expandable when the outer shell is clamped axially onto the inner shell, the improvements wherein the sealing element is bonded to the relatively more rigid inner shell, wherein the O.D. gasket and the sealing element are both bonded to said inner shell, and wherein said outwardly turned flange comprises a plurality of spaced-apart nibs with grooves therebetween.

3,843,140
COOLED MECHANICAL SEAL

Ehrhard Mayer, and Michael Steigenberger, both of Eurasburg, Germany, assignors to Firma Feodor Burgmann, Jr., Wolfratshausen, Germany

Filed Nov. 20, 1972, Ser. No. 308,006

Claims priority, application Germany, July 7, 1972, 2233381; Nov. 24, 1971, 2158126

Int. Cl. F16j *15/40*

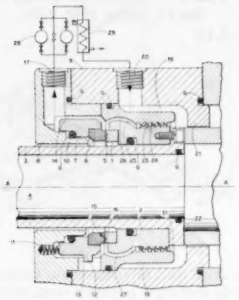
U.S. Cl. 277—67 **8 Claims**

1. A shaft sealing assembly with a rotatable shaft and a pump device for circulating a coolant liquid medium, a housing stationary relative to said shaft and provided with a wall having a bore, said housing being provided with openings for admission and discharge of said medium, said shaft extending through said bore; sealing means comprising a slide-ring unit coaxially surrounding said shaft within said bore and arranged for movement axially of said shaft under resilient pressure; a counter-ring unit similar to said slide ring unit but prevented from axial movement relative to said shaft when in operating position; one of said ring units being mounted for rotation with said shaft and the other being fixedly supported on the housing, and each of said ring units having an end face for mutual contact under said resilient pressure to form a sealing interface with an annular outside edge,

a ring channel with a portion passing over the outside edge of said interface and interconnecting said admission and discharge openings,

means located in said channel for propelling said medium through said channel, and

a portion of said channel immediately ahead of the outside edge of said interface being defined between a fully annular convex inner wall and fully annular concave outer wall as a converging channel for accelerating said coolant liquid flow and directing the increased velocity flow radially inwardly toward said outside edge of the interface.



3,843,141

FLAT SEALING JOINT FORMING IN PARTICULAR A CYLINDER HEAD GASKET FOR AN INTERNAL-COMBUSTION RECIPROCATING-PISTON ENGINE

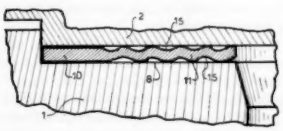
Karl Walter Kuhn, Saint-Germain-En-Laye, France, assignor to Societe D'Etudes De Machines Thermiques Saint-Denis, France

Filed Sept. 25, 1972, Ser. No. 291,903

Claims priority, application France, Oct. 28, 1971, 71.38764

Int. Cl. F16j *15/08*

U.S. Cl. 277—209 **4 Claims**



1. An internal combustion piston engine of the type embodying at least a cylinder head, a cylinder water jacket, a cylinder barrel, and outer flange means on said barrel resting upon an edge of said cylinder water jacket, said cylinder head and said barrel having confronting surfaces in a zone located radially inwardly with respect to said outer flange means of said cylinder barrel, and the improvement comprising a gasket dimensioned to lie between said confronting surfaces and consisting of a substantially flat metal sealing packing covering substantially the whole of said confronting surfaces of said barrel with said cylinder head and said gasket consisting of a pair of adjacent respectively radially aligned outer and inner annular portions, said outer portion having a substantially smooth face, said inner portion being more easily deformable than said outer portion upon being clamped between said confronting engaging surfaces and having a greater radial width than the outer radial portion, said inner portion being further characterized in that said inner portion is provided with a series of concentric alternate grooves and projections provided on at least one of the faces of said gasket and are comprised of radially disposed flute-like formations, the crests of which are substantially flat and in substantially parallel relation to such face.

3,843,142

SEALING APPARATUS FOR GAS VAPOR CONTAINER SUBJECTED TO ABOVE OR BELOW ATMOSPHERIC PRESSURES FOR PRODUCT WEBS TO BE CONTINUOUSLY TREATED

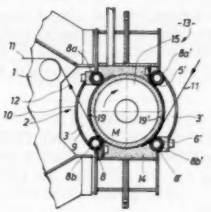
Karl Peter Lopata, Krefeld, and Gunter Heinz Schiffer, Krefeld-Bockum, both of Germany, assignors to FA Kleinewefers Industrie-Companie GmbH, Krefeld, Germany

Filed June 25, 1973, Ser. No. 373,407

Claims priority, application Germany, Dec. 20, 1972, 2262324

Int. Cl. F16j *15/54*

U.S. Cl. 277—237 **8 Claims**



1. A sealing apparatus for mounting in an opening in gas containers having pressures which differ from the atmosphere for transferring a web of material therethrough comprising: a cylindrical roll journaled for rotation positioned adjoining said opening; an endless seal strip of resilient material held in contact with the roll and having two straight portions arranged parallel to the roll axis and two circular portions connecting the straight portions; a hood, made of rigid material, in contact with the seal strip for holding it against the cylindrical roll, the outer edges of said hood sealed to the container opening; and means for passing the web through an opening in the hood and between the sealing strip and the surface of the roll.

3,843,143

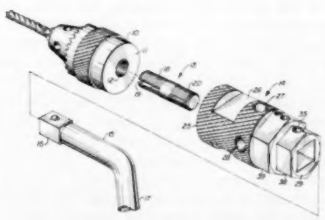
CHUCK ADAPTER

Thomas Earl Laxson, 211 Lakeridge Rd., San Antonio, Tex. 78229

Continuation-in-part of Ser. No. 136,945, April 23, 1971, abandoned. This application Apr. 30, 1973, Ser. No. 355,502

Int. Cl. B23b *51/12*

U.S. Cl. 297—1 A **10 Claims**



1. For use with a chuck having an end face onto which opens a threaded socket, a chuck adapter comprising:

a. a threaded stem having an end portion adapted to be screwed into said threaded socket and another end por-

tion projecting from said end face after the first mentioned end portion is screwed into the threaded socket;

b. an adapter body having a pair of opposed end faces;

c. a series of threaded bores of different diameters opening onto one of said end faces with the bore of the largest diameter being at said end face and the remaining bores arranged in decreasing diameter away from said bore of largest diameter, one of said bores receiving an end portion of said threaded stem;

d. said adapter body being formed in the region adjacent to said threaded bores, with structural elements adapted to cooperate with a small hand tool in tightening said body on said stem and the stem in said threaded socket;

e. a series of non-circular sockets of different cross-sectional areas opening onto the other of said end faces, with the socket of the largest cross-sectional area at the end face and the remaining sockets decreasing in cross-sectional area away from said socket of largest cross-sectional area, each of said sockets being adapted to receive the driving head of a hand wrench, and

f. structural elements on said adapter body in the region of said non-circular sockets adapted to cooperate with a manual tool in applying torque to said adapter body.

3,843,144

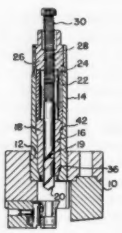
AUTOMATIC SCREW MACHINE TOOL HOLDER

Chester S. Zajac, 8010 Sierra Oval, Parma, Ohio 44130

Filed Apr. 20, 1972, Ser. No. 245,770

Int. Cl. B23b *31/20*

U.S. Cl. 279—51 **1 Claim**



1. An automatic screw machine tool holder comprising; a tool holder body having an open-ended bore; an elongated sleeve having one end disposed in the open-ended bore, whereby the sleeve is secured to the body and extends outwardly therefrom; said sleeve having a longitudinal tool-receiving bore therein; a collet operatively disposed in the tool-receiving bore for gripping an associated elongated tool in operative position therein; a hollow cylindrical sleeve insert slidably disposed in the open-ended bore outwardly of the insert and contacting the same; and a lock stud threaded into the outer end of the open-ended bore and contacting the insert; the open-ended bore longitudinal wall and the collet outer longitudinal wall having coacting tapered surfaces enabling the collet to grip the tool when the collet, with the tool therein, is forced into operative position in the open-ended bore by the insert and stud, the stud having a threaded longitudinal bore, and further including a bolt threaded into such stud bore and passing through the insert and operatively contacting the tool, whereby the tool may be secured in preselected longitudinal position in the collet, said collet being formed of coacting sets of radially flexible fingers at each end of the collet which function to grip the tool throughout the length of the collet, there being two sets of said coacting tapered surfaces enabling the sets of flexible fingers at each end of the collet to independently grip the tool.

3,843,145

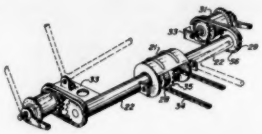
TRICYCLE DRIVE TRAIN WITH COASTER BRAKE

Raymond E. Templeton, 11144 Kolina Ln., Sun City, Ariz. 85351

Division of Ser. No. 313,987, Dec. 11, 1972,. This application Feb. 4, 1974, Ser. No. 439,621

Int. Cl. B62m *1/02, 1/06*

U.S. Cl. 280—7.15 **1 Claim**



1. A unitary drive train attachment for converting a conventional bicycle to a tricycle having a front steering wheel and two pedal-controlled rear wheels to selectively and evenly provide driving, free-wheeling and braking action at both of said rear wheels in response to pedal action, said attachment comprising:

a. a central housing member adapted to be received between the rear-wheel fork of said bicycle and secured thereto without modification thereof by bolts extending through the fork members in place of the conventional rear-axle stubs;

b. a pair of rear-axle housing members having inner ends thereof secured to and extending laterally from said central housing member;

c. a pair of rear-axle half-shafts, each journaled for rotation within a respective one of said rear-axle housing members, the outer ends of said shafts extending laterally from said housing members and the inner ends thereof extending into said central housing;

d. differential means substantially enclosed within said central housing member for transmitting motive and braking power to said inner ends of said half-shafts;

e. a pair of frame members, each extending laterally from a respective outer end of one of said rear-axle housing members;

f. a pair of coaster brake means, each journaled in a respective said frame member;

g. a pair of conventional rear bicycle wheels, each fixed to and rotatably carried by a respective said coaster brake means; and

h. drive chain - sprocket means for transmitting motive and braking power from the pedal crank of said bicycle to said differential means and from the outer ends from said rear-axle half-shafts to said respective coaster brake means,

said elements constituting a unitary drive train attachment for converting a bicycle to a tricycle by attaching said housing to said rear fork.

3,843,146

ROLLER SKATE CONSTRUCTION

Kunio Hirr'.a, No. 18-1, 1-Chome, Tenjin-Cho, Nagata-ku, Kobe, Japan

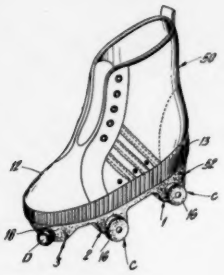
Filed July 18, 1973, Ser. No. 380,265

Int. Cl. A63c *17/14*

U.S. Cl. 280—11.2 **9 Claims**

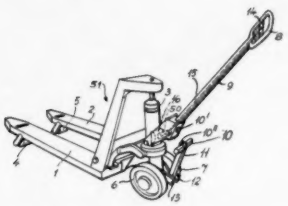
1. A roller skate comprising a shoe forming an instep covering having a bottom wall, a metal strut extending downwardly from said bottom wall along a major portion of the length thereof and having at least two longitudinally spaced downwardly extending wheel brace projections, a sole joined to said instep and covering said strut and defining a wheel bearing

threaded receiving socket below each wheel brace projection, and a threaded wheel bearing member threaded into each of



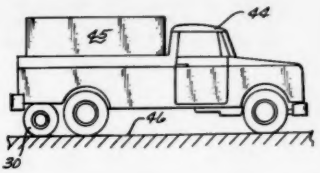
said receiving sockets and having at least one wheel rotatably supported thereon.

3,843,147
PALLET TRUCK
Yngve Albin Fritiof Fredricson, Kalmar, Sweden, assignor to AB Hill & Co., Kalmar, Sweden
Filed Nov. 10, 1972, Ser. No. 305,486
Claims priority, application Sweden, Dec. 2, 1971, 15420/71
Int. Cl. B66f *5/04*
U.S. Cl. 280—43.12 **9 Claims**



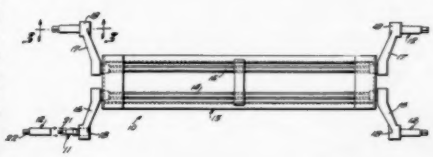
1. A pallet truck comprising fork means for supporting a load, wheels mounted at both ends of said fork means for engaging a base, hydrualic jack means in a housing mounted on an axle supporting one of said wheels for raising and lowering said fork means with respect to said base, said jack means including a first piston for engaging said fork means and a two-piston unit having second and third hydraulic pistons for hydraulically actuating said first piston, a change-over device mounted on and within said housing having three positions for controlling operation of said two-piston unit, drawbar means for the truck and handle means in said drawbar means including means for engaging and setting said change-over device to any selected one of its three positions wherein (a) with said change-over device set in its first position hydraulic fluid is unobstructedly supplied by the second and third pistons to the first piston for raising the fork means with full power, (b) with the change-over device set in its second position the hydraulic fluid flow from one of the second and third pistons to the first piston becomes inactive, while the flow of hydraulic fluid from the other of the second and third pistons to the first piston causes the fork means to be raised with reduced power, and (c) with the change-over device set in its third position the hydraulic fluid from the second and third pistons to the first piston becomes inactive concurrently with hydraulic fluid that has previously actuated the first piston having a free outlet so as to unload the first piston for setting the latter in its quiescent position.

3,843,148
OVERLOAD AXLE ASSEMBLY
Jerry L. Wright, Mesa, Ariz., assignor to Scranton Manufacturing Company, Inc., Scranton, Iowa
Filed Feb. 26, 1973, Ser. No. 335,941
Int. Cl. B60g *11/02*
U.S. Cl. 280—124 R **8 Claims**



1. An overload axle assembly comprising:
a pair of spring hanger brackets, each having a forward and a rearward downwardly depending means including a plurality of vertically spaced spring-positioning holes therein;
a spring means carried by each of the spring hanger brackets;
an axle having a wheel-supporting spindle at each end thereof; and
means attaching each of said spring means to said axle and having four plates and a plurality of bolts, one of said plates being placed against the upper surface of each of said spring means intermediate the ends of said spring means, and one of said plates being placed against the bottom surface of said axle inwardly from said spindles and directly below each of said spring means, said bolts connecting said plates against said spring means with said plates against said axle.

3,843,149
HOT DIP GALVANIZED TORSION BAR SUSPENSION SYSTEM
William P. Whitley, Jr., 4525 E. 10th Ln., Hialeah, Fla. 33103
Division of Ser. No. 232,677, March 8, 1972,. This application May 7, 1973, Ser. No. 358,148
Int. Cl. B60b *35/08*
U.S. Cl. 280—124 B **1 Claim**



1. A torsion bar suspension system for trailer wheels and the like comprising, in combination, a metal supporting framework adapted to be secured to the undercarriage of a trailer, a pair of spaced, parallel, torsion bars longitudinally-fitted and secured with respect to said supporting framework, said torsion bars each having end portions extending outwardly at each end of said supporting framework, a first pair of laterally-opposed moment arm members secured to one end each of one of said pair of torsion bars, a second pair of laterally-opposed moment arms secured to one end each of said other of said pair of torsion bars, the outer ends of each of said moment arms being formed with hub portions, a spindle extending outwardly of each of said hub portions and being intergrally formed therewith and extending outwardly of each

end of said metal supporting framework, said spindles being machine-finished and said torsion bar suspension system being hot dip galvanized over all exterior surfaces except the machined surface areas of said spindles.

3,843,150

RAPIDLY INFLATABLE IMPACT CUSHIONING DEVICE FOR HIGH-SPEED TRAVELLING VEHICLE

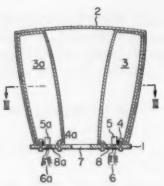
Ikuo Harada, Tokyo; Masafumi Hamasaki, Nobeoka; Isao Maeda, Nobeoka, and Nobuyuki Izawa, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1971, Ser. No. 201,332

Claims priority, application Japan, Mar. 1, 1971, 46-10004; Nov. 26, 1970, 45-103696; Nov. 24, 1970, 45-102724

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **4 Claims**



1. A rapidly-inflatable impact cushioning device for use on a high-speed travelling vehicle, said device comprising

a. a rapidly-inflatable cushioning bag member fixedly positioned on a support member, said cushioning bag member being provided with an air passage communicating with the atmosphere;

b. at least one unfoldable inflating bag member positioned within said rapidly-inflatable cushioning bag member and provided with a gas discharging outlet, said unfoldable bag member further being provided with gas-providing inflating means and being adapted to be inflated and unfolded when gas is received from said inflating means; said cushioning bag member being capable of receiving air from the atmosphere upon inflation of said unfoldable bag member, thereby permitting rapid and simultaneous inflation of both bag members when gas is received by said unfoldable bag member; and

c. the hydraulic diameter of said air passage in said rapidly inflatable cushioning bag member and the hydraulic diameter of said gas discharging outlet in said unfoladable inflating bag member have the relationship expressed below:

$$-2/15\ MD + 58 \quad TD \quad -7/18\ MD + 105,$$

wherein TD stands for the hydraulic diameter of the gas discharging outlet in the unfoldable inflating bag member expressed in mm, and MD stands for the hydraulic diameter of the air passage in the main bag member expressed in mm.

3,843,151

PARTICLE ENGAGING SCREEN DEVICE FOR PYRO-TECHNIC SYSTEM

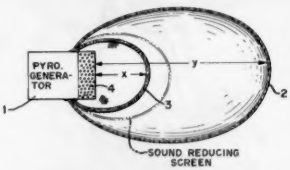
Donald J. Lewis, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,630

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **6 Claims**

1. In an air cushion inflation apparatus including a gas generator made up at least partially of a pyro-technic material which burns to produce a gas and an air bag to which said gas is directed, the improvement comprising: a gas impurity screen means interposed between said gas generator and said air bag, said gas impurity screen means being contained entirely within said bag, both before and after actuation of said inflation apparatus, and said gas impurity screen means being adapted to engage impurities, said gas impurity screen means being porous to the passing of said gas therethrough and into the bag for inflation thereof; and a manifold for distributing



said gas to the inside of said air bag for inflation thereof, said manifold being made of porous metal and serving both for distribution of said gas as a result of its porosity and for entrapment of heat-carrying particles.

3,843,152

IMPACT ENERGY ABSORBING APPARATUS FOR VEHICLE

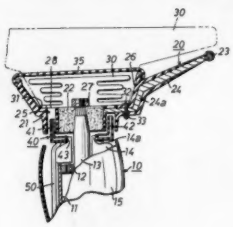
Masakatu Nonaka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Feb. 12, 1973, Ser. No. 331,599

Claims priority, application Japan, Feb. 29, 1972, 47-20831

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **7 Claims**



1. An impact energy absorbing apparatus for a vehicle comprising:

a collision sensing means for detecting a collision of the vehicle and generating a signal when a collision is sensed;

an external pressure source located at a body portion of the vehicle for issuing pressurized fluid therefrom in response to the signal generated from said sensing means;

a steering wheel assembly mounted on the top end of a steering shaft of the vehicle and provided at the base portion thereof with a cylindrical aperture coaxial with the axis of said steering shaft, said aperture opening upward to a container space formed above said base portion within said steering wheel assembly and downward to the bottom of said base portion;

an inflatable bag confined within said container space to restrain movement of the operator of the vehicle during a collision;

a fluid discharger including a cylindrical discharging chamber formed by a pair of bottomed cylindrical large and small diameter walls and mounted on the upper protion of a steering column tube surrounding said steering shaft and assembled within said aperture coaxial with the axis of said steering shaft, said discharging chamber being in open communication with the interior of said bag by way of spokes of said steering wheel assembly crossing said aperture, and a cylindrical air passageway being formed between the periphery of said fluid discharger and an inner wall of said aperture, said pressure source being located at the body portion of the vehicle externally of

said steering wheel assembly and said steering column tube;

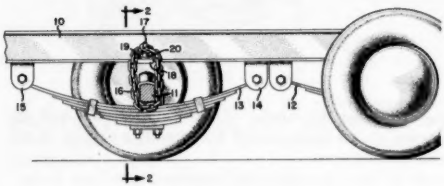
communication means for connecting said external pressure source with said discharging chamber, whereby said bag is inflated by pressurized fluid from said pressure source through said discharging chamber together with atmospheric air being sucked along with the jet of said pressurized fluid through said air passageway.

3,843,153

VEHICLE AXLE SUPPORT DEVICE FOR TANDEM TRAILERS AXLE

Charles Wilson Ryan, Box 342, Fernley, Nev. 89408

Filed Apr. 2, 1973, Ser. No. 346,752
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 G **10 Claims**



1. Temporary axle support device for tandem wheeled trailers having an elongated U-shaped channel beam support with the flange portions extending horizontally comprising

a. a base plate having a width greater than the width of said U-shaped channel beam and having a hole therein near one edge to accomodate a bolt;

b. a clamp plate having a hole near one edge and sufficient width to overlap the upper portion of a flange of said channel beam when the hole thereof is vertically aligned with the hole of the base plate;

c. bolt means extending through said base plate and clamp plate with sufficient length extending above said clamp plate to engage at least two links of a heavy duty chain;

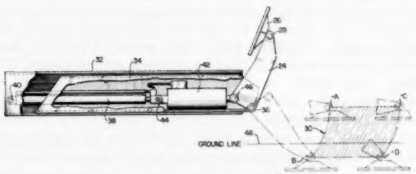
d. chain means having sufficient length to extend doubled from said channel beam beneath an axle attached by spring means to said frame.

3,843,154

OUTRIGGER SUPPORT MECHANISM

Clarence Russell Thompson, Waverly, Iowa, assignor to Koehring Company, Milwaukee, Wis.

Filed Nov. 1, 1972, Ser. No. 302,813
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **21 Claims**



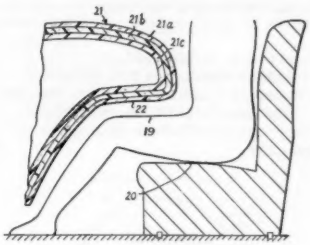
1. In an outrigger support mechanism for stabilization of a vehicle, said outrigger having a support arm, which arm has an inner end and an outer end, said arm being pivotal between a transport position in which said outer end of said arm is upwardly disposed and support positions in which said outer end of said arm is disposed downwardly from the transport position, the improvement comprising a ground-engaging pad having a ground contacting surface, pivot means connecting said paid to the outer end of said arm and means for extending and retracting said arm toward and away from said vehicle and for effecting movement of said arm and pad from (1) said transport position wherein said ground contacting surface is disposed on one side of a plane including said pivot means and said inner end to (2) said support positions wherein said ground contacting surface is disposed on the other side of said plane.

3,843,155

MOTOR VEHICLES INCORPORATING MEANS FOR PROTECTING THE OCCUPANTS IN THE EVENT OF COLLISION ACCIDENTS

David Blythe Foster, Windlesham, England, assignor to Science Nightingale International Limited, Hamilton, Bermuda

Continuation-in-part of Ser. No. 859,752, Sept. 22, 1969, abandoned. This application Aug. 31, 1971, Ser. No. 176,648
Claims priority, application Great Britain, Sept. 27, 1968, 46129/68; Nov. 8, 1968, 53173/68; Apr. 9, 1969, 18190/69; Apr. 30, 1969, 22142/69; May 20, 1969, 25641/69; May 28, 1969, 27111/69; May 28, 1969, 27112/69; June 16, 1969, 30465/69; May 29, 1969, 27366/69
Int. Cl. B60r *21/04*
U.S. Cl. 280—150 B **26 Claims**



1. In a motor vehicle having a seat for supporting an occupant, the improvement which comprises resilient paddings in front of said seat, which paddings are so shaped as to conform to the lateral profile of a human occupant supported by said seat in the natural long-jump posture, said paddings having a relatively horizontal top area positioned to be contacted by the head, face and upper chest, a central rounded rearwardly-projecting area positioned to be contacted by the lower chest and abdomen, a first underneath substantially horizontal area positioned to be contacted by the greater part of the length of the thighs, and a second underneath area sloping downwardly and forwardly at a distinct angle to said first underneath area and shaped and positioned to be contacted by the greater part of the length of the lower legs of said occupant when said occupant is thrown forward from said seat toward said padding with said legs in said long-jump posture.

3,843,156

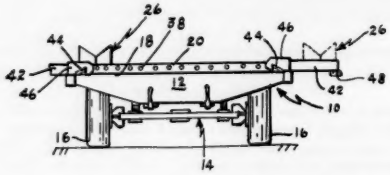
CARGO HANDLING TRAILER

Theodoric B. Alfriend, Jr., and John H. Klopp, both of Baltimore, Md., assignors to The United States of America as represented by the United States Air Force, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,902
Int. Cl. B60p *7/12*
U.S. Cl. 280—179 R **4 Claims**

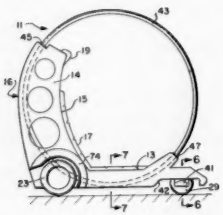
1. A cargo handling trailer comprising a frame, at least one rail assembly fixedly secured to said frame, said rail assembly having an outstanding element, a rail extension removably secured to said rail assembly, means located at one end of said rail extension for removably engaging said outstanding ele-

ment, a slot formed in said rail assembly and a slot formed in said rail extension, said pair of slots being in alignment with one another when said rail extension is secured to said rail assembly, a chock assembly slideably mounted within said slot in said rail assembly, said chock assembly being made up of a pair of wedge-shaped elements, first means for slideably securing said pair of wedge-shaped elements within said slots in said rail assembly and said rail extensions, second means for slide-



ably securing each of said wedge-shaped elements to said first securing means for adjustable movement of said pair of wedge-shaped elements with respect to one another and means for fixedly securing said chock assembly within said rail assembly whereby upon release of said means for fixedly securing said chock assembly said chock assembly may be easily slid from said rail assembly onto said rail extension to facilitate in the unloading of said trailer.

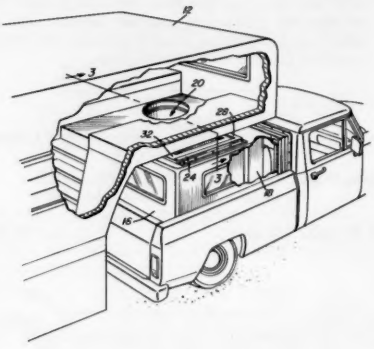
3,843,157
HAND-PROPELLED TOY VEHICLE
Dennis G. Wyman, 4 Crestline Ct., Owings Mills, Md. 21117
Filed Jan. 24, 1973, Ser. No. 326,485
Int. Cl. B62r *9/02*
U.S. Cl. 280—249 **3 Claims**



1. A toy vehicle comprising a rigid frame including a seat and back, wheels supporting said frame for movement over the ground, means for driving at least one of said wheels including a relatively large ring rotatably supported longitudinally of said frame and having an exposed portion above and forwardly of said occupant, said ring including internal peripheral apertures engaging a sprocket wheel drivingly engaging said at least one wheel whereby said occupant can grasp and pull forwardly and downwardly on said ring to propel said vehicle.

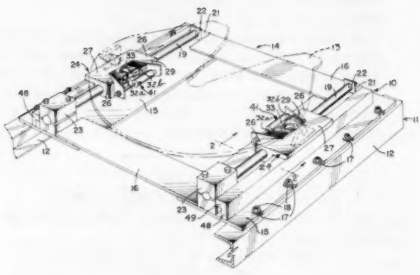
3,843,158
TRAILER COUPLING WITH PASSAGEWAY
Robert D. Schwellenbach, Box 246, Pierre, S. Dak. 57501
Filed Dec. 20, 1972, Ser. No. 316,685
Int. Cl. B60d *5/00*
U.S. Cl. 280—403 **10 Claims**

1. In combination with trailer and towing vehicles each having an interior for carrying passengers or the like, a coupling comprising a first mounting frame attached to said towing vehicle, a second mounting frame attached to said trailer vehicle, said second mounting frame being vertically spaced from said first mounting frame, pivot support means supporting said second frame from said first frame for pivotal movement about a generally vertical axis, and passageway means



communicating the interior of said towing vehicle with the interior of said trailer vehicle for permitting passage of persons therebetween.

3,843,159
FIFTH WHEEL SLIDER SUPPORT
Charles N. Hood, II, Deerfield, Ill., assignor to Amstead Industries Incorporated, Chicago, Ill.
Filed Oct. 19, 1973, Ser. No. 408,194
Int. Cl. B62d *53/06*
U.S. Cl. 280—407 **9 Claims**

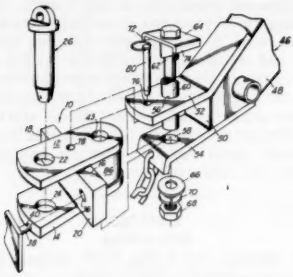


1. A slider support for mounting a load carrying member on the frame of a highway vehicle, said support comprising a base adapted to be attached to said frame, laterally spaced and longitudinally extending guide rods mounted on said base, carrier blocks having means to support an associated fifth wheel, said blocks mounted for lengthwise movement on respective guide rods, a plurality of lock washers slidable on each of said guide rods and engageable with one of said carrier blocks, said lock washers being tiltable on said guide rods between a locked position resisting lengthwise movement on said guiding rods and an unlocked position permitting sliding movement on said guiding rods, and resilient means disposed between said lock washers to divide said lock washers into groups and operative to urge said groups of lock washers to said locked position to resist buff and draft forces imposed on said member whereby said carrier blocks in engagement therewith are locked against lengthwise movement of said guide rods.

3,843,160
CLEVIS HITCH ASSEMBLY

George Victor Frushour, and Marvin Lee Nafziger, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.

Filed Feb. 12, 1973, Ser. No. 331,636
Int. Cl. B60d 1/02
U.S. Cl. 280—415 A 16 Claims



1. A hitch adaptor for displacing the pivotal connection between a drawbar of a towing vehicle and the tongue of a towed vehicle rearwardly of such drawbar, comprising in combination:

upper and lower horizontal hitch plates disposed in vertically spaced relation to accept a drawbar between forward ends thereof, said hitch plates having vertically registered openings at said forward ends thereof to align with a drawbar opening and accept a vertical pin connecting the adaptor to a drawbar, said hitch plates also having vertically aligned openings at their rearward ends to align with openings in a tongue of a trailing vehicle and accept a vertical clevis assembly establishing pivotal connection between the hitch adaptor and a tongue of a trailing vehicle, said clevis assembly including a bearing sleeve received in said openings at the rearward ends of the hitch plates and a retainer plate fixed to the upper end of said bearing sleeve, said bearing sleeve being of a length greater than the spacing between the upper surface of said upper hitch plate and the lower surface of said lower hitch plate and said retainer plate having a depending flange for cooperation with a draft tongue to prevent rotation of the bearing sleeve relative to such draft tongue;

an elongate transverse bumper bar between said hitch plates and projecting transversely on opposite sides thereof, said bumper bar being rigidly connected to said hitch plates between the forward and rearward ends thereof and presenting forward bumper faces beyond the opposite sides of said hitch plate which are located a distance behind the openings in the forward ends of said hitch plates which is selected to engage a rear surface of a certain size drawbar and prevent any appreciable pivoting of the adaptor about the vertical pin connecting the adaptor to such drawbar.

3,843,161
TRAILER COUPLER ASSEMBLY

John I. Hastings, 3830 Minor Rd., Copley, Ohio 44321

Filed Dec. 4, 1972, Ser. No. 311,696
Int. Cl. B62d 53/06
U.S. Cl. 280—423 R 4 Claims

1. A trailer coupling assembly for interconnecting a towed vehicle having a standard V-shaped hitch on its front end to a towing vehicle, comprising;

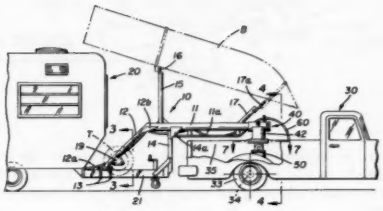
A. a main body portion having first and second ends;

B. V-shaped first support means

1. depending from said main body portion adjacent said first end and
2. having its legs releasably secured to the legs of said V-shaped hitch;

C. second support means

1. depending from said main body portion inwardly of said first end and
2. being releasably secured to said V-shaped hitch of said towed vehicle; and



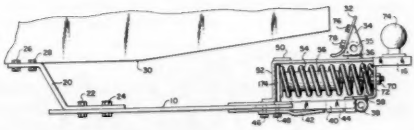
D. third support means including

1. a king pin depending from said main body portion adjacent said second end thereof and pivotally supported thereby for swinging about the longitudinal axis thereof, and
2. a fifth wheel assembly mounted on said towing vehicle
3. said king pin being releasably secured to said fifth wheel assembly on said towing vehicle at a point forward of the rear axle thereof and
4. being swingable about the vertical axis of said king pin.

3,843,162
LOAD DAMPING FRAME HITCH FOR VEHICLES TOWING A TRAILER

John C. Abromavage, Tempe, and James W. Ryden, Phoenix, both of Ariz., assignors to Amerco, Inc., Phoenix, Ariz.

Filed Aug. 1, 1973, Ser. No. 384,764
Int. Cl. B60d 1/06
U.S. Cl. 280—486 8 Claims



1. A vehicle frame hitch of the type used for hitching and pulling trailers comprising:

A. a hitch platform secured at its forward end to the vehicle frame and extending rearwardly;

B. a hitch ball secured to a sliding housing at the rear end of said hitch platform;

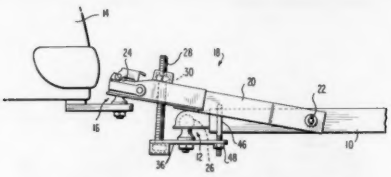
C. a bumper adapter bracket secured to the automobile bumper and with linkage extending downwardly to movably support said hitch platform; and

D. compression means supported upon said hitch platform and interposed between said hitch ball and said hitch platform so as to absorb forward thrust of said hitch ball.

3,843,163
ADJUSTABLE TRAILER HITCH

William B. Hale, 1203 Box Elder St., Casper, Wyo. 82601

Filed Feb. 5, 1973, Ser. No. 327,754
Int. Cl. B60d 1/06
U.S. Cl. 280—490 R 5 Claims



1. A selectively adjustable hitch apparatus for a towed vehicle having a normally horizontal main frame and a follower hitch coupling forwardly positioned thereon, comprising

auxiliary frame means attached to such normally horizontal main frame rearwardly of such follower hitch coupling for pivotal movement relative to such main frame about a horizontal axis,

follower hitch means on said auxiliary frame means for cooperative engagement with a complementary towing hitch coupling on a towing vehicle,

towing hitch means for cooperative engagement with such follower hitch coupling on such towed vehicle,

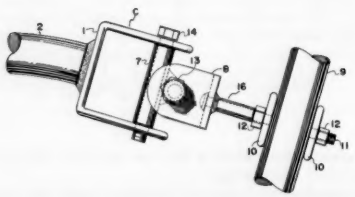
vertically adjustable means for mounting said towing hitch means at a selectable relatively fixed position below said auxiliary frame means intermediate the length thereof, and

retaining means on said auxiliary frame means engaging said adjustable mounting means for retaining said mounting means in a selected vertical position relative to said auxiliary frame means, whereby the vertical adjustment of said adjustable mounting means effects pivotal movement of said auxiliary frame means in a vertical plane to a selected position which will permit the main frame of such towed vehicle to remain horizontal irrespective of the height of the hitch means of a towing vehicle.

3,843,164
BICYCLE CART CONNECTOR

Michael W. Flegel, P.O. Box 506, Elgin, Ill. 60120

Filed Jan. 30, 1973, Ser. No. 328,099
Int. Cl. B60d 1/16
U.S. Cl. 280—492 1 Claim



1. A connector for attaching a tow bar of a cart to a bicycle including:

a two axis universal connection,

one side of said universal connection being rigidly fastened to said tow bar,

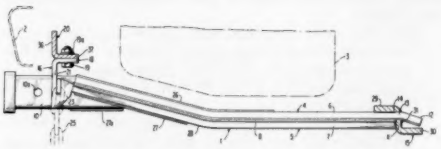
the other side of said universal connection being pivotally connected to said bicycle for rotation about an axis which extends at right angles to each of the axes of said two axis universal connection,

each side of said two axis universal connection including a clevis and a sleeve rotatably mounted on a clevis pin, the sleeve of one side of the connection being fastened tangentially to the sleeve of the other side of the connection, said pivotal connection of said universal connection to said bicycle having means to adjustably clamp said two axis universal connection to said bicycle, said means including a sleeve fastened at one end to the base of one of said clevis, a threaded bolt extending through said sleeve and extending outward beyond the free end of the sleeve, a pair of plates mounted on said bolt and movable along the length thereof, a pair of nuts mounted on said bolt and engaging the non-facing sides of said plates, said plate being adaptable to clamp the opposite sides of a pair of bicycle frame members when the bolt is extended between the frame members.

3,843,165
DRAW BAR

Martin H. Mathisen, Sun Valley, Calif., assignor to Eaz-Lift Spring Corporation, Sun Valley, Calif.

Filed June 19, 1972, Ser. No. 264,327
Int. Cl. B60d 1/14
U.S. Cl. 280—495 8 Claims



1. A draw bar for a load transferring hitch for positioning under a towing vehicle, said draw bar comprising a member having socket means at its rear end, means at its front end for hooking onto a first part carried by said towing vehicle and means in the region of its rear end for bolting to a second part carried by the towing vehicle, said draw bar being assembled with the towing vehicle by first attaching the hooking means to said first part, then, without tilting the draw bar about its longitudinal axis, pivoting the draw bar upwardly about said hooking means and then bolting the said means for bolting to said second part, further comprising a pair of corrugated sheets, the corrugations of each sheet running longitudinally and the corrugations of one sheet being opposite the corrugations of the other sheet.

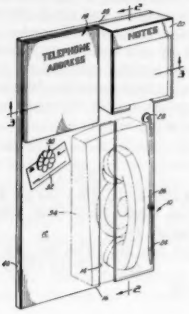
3,843,166
DEVICE FOR REMOVABLE ATTACHMENT TO A WALL MOUNTED TELEPHONE

Anthony P. Barone, 1540 Hubbard Rd., North Madison, Ohio 44057

Continuation-in-part of Ser. No. 234,143, March 13, 1972, abandoned. This application May 8, 1972, Ser. No. 251,439
Int. Cl. B42d 5/00
U.S. Cl. 281—15 B 11 Claims

1. A device for removable attachment to a wall phone which phone has a back plate with means for mounting the back plate to a wall and a front cover for said phone which when attached to said back plate surrounds the periphery of said back plate, said device comprising a planar sheet of material, said material having an opening therein which opening is adapted to permit the sheet to be mounted adjacent a wall and be located by said back plate, said opening being of such size and arrangement that when the phone cover is engaged with said back plate said cover overlies said sheet material to conceal said opening and said mounting means, said sheet mate-

rial further comprising means for the reception of indicia including means to removably receive sheets of paper and also



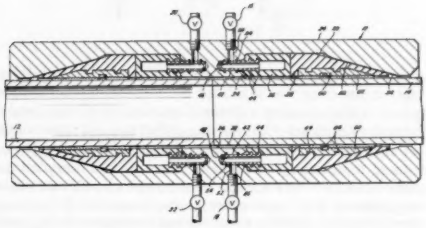
including flange means extending forward from said sheet material disposed to support a permanently bound book.

3,843,167

HYDRAULICALLY ACTUATED PIPE COUPLING

Bo Gronstedt, 1540 Hubbard Rd., Pasadena, Tex. 44057

Filed Jan. 31, 1973, Ser. No. 328,395
Int. Cl. F16l *55/00*
U.S. Cl. 285—18 **9 Claims**



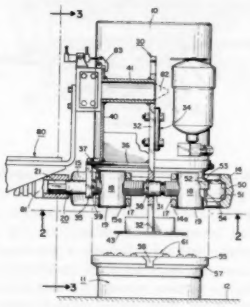
1. A hydraulically actuated pipe coupling including:
an elongate, generally cylindrical, tubular body,
the body adapted to receive in at least one end a piece of pipe to be coupled thereto,
the inside diameter of the body being larger than the outside diameter of the pipe,
an elongate recess within the body,
the recess being tapered to the inside diameter of the body adjacent the end adapted to receive the pipe,
first and second ports within the body communicating with the recess,
first and second valves hydraulically communicating with the first and second ports respectively,
an annular hollow inflatable bladder mounted within the recess,
inflation tubes extending from the bladder into the first and second ports whereby hydraulic communication is established between the valves and the interior of the inflatable bladder,
an annular wedge member within the recess slidingly engaging the tapered portion of the recess,
the inside diameter of the bladder and the wedge being substantially the same as the inside diameter of the body,
a plurality of independent serrated slips imbedded intermediate the ends of the wedge,
the serrated surface of the slips arranged about the pipe when inserted into the body, and
the wedge and bladder being formed of an elastic deformable material, whereby fluid injected into the bladder serves to inflate the bladder to seal about the pipe and to force the wedge into contact with the pipe so that the slips grip the pipe.

3,843,168

CLAMP CONNECTORS

Charles D. Morrill, Bellaire; David P. Herd, Houston, both of Tex., and Thomas W. Childers, Mandeville, La., assignors to Esso Production Research Company, Houston, Tex.

Filed Aug. 16, 1973, Ser. No. 389,055
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 **13 Claims**



1. A clamp connector for use in clamping two hub members together comprising:
two clamp halves surrounding said hub members;
two spaced apart plates secured to one of said hub members on opposite sides thereof for engaging guide means on said other hub member;
a screw member having oppositely directed threads at each end thereof and supported by each of said plates and extending through bores formed in each clamp half;
a threaded nut mounted in each bore of each clamp half, each threaded end of each screw member mating with the threads of one of said nuts;
said bore in each clamp half being larger than said screw member extending therethrough to permit limited movement of said clamp halves relative to said nuts; and
rotations of said screw members in one direction causing said clamp halves to move to engagement with said hub members and clamp them together and rotations of said screw members in an opposite direction from said one direction causing said clamp halves to move to disengagement from said hub members.

3,843,169

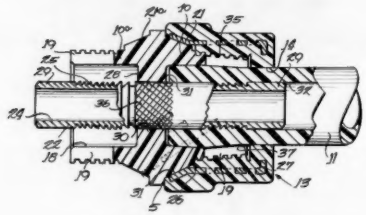
COUPLING FOR HOSE, PIPE, TUBING OR THE LIKE

Carleton H. Wise, K. O. Machine & Tooling Co.; 324 S. Kidd St., Whitewater, Wis. 53190

Filed May 24, 1972, Ser. No. 256,269
Int. Cl. F16l *35/00*
U.S. Cl. 285—39 **18 Claims**

1. In a coupling for a yieldable fluid conduit, housing means integrally molded of resilient material, said housing means including a central portion having a central fluid passageway of predetermined diameter extending therethrough and an end portion extending from said central portion and having an end fluid passageway extending therethrough, said central and said end passageways being coaxially aligned, a cylindrical insert having substantially greater rigidity than said housing having an outer diameter substantially equal to the inner diameter of said fluid conduit and disposed within said central fluid passageway, the inner diameter of said central fluid

passageway being substantially equal to the outer diameter of said insert whereby said insert is retained against axial movement within said central fluid passageway, said insert extending outwardly into said end portion, said end portion having an inner diameter substantially equal to the outer diameter of the fluid conduit whereby the fluid conduit fits over said insert within said end portion, the outer surface of said end portion being threaded, a locking member having a threaded central aperture, said threaded central aperture being adapted to engage the threaded surface of said end portion, said threaded



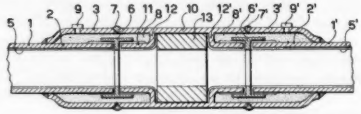
portion and said threaded aperture having a tapered relationship whereby tightening said locking member onto said end portion compresses said end portion and resiliently deforms said fluid conduit between said end portion and said insert, said locking member having a radially extending flange portion extending inwardly from the distal portion of said locking member, said flange portion having an inner diameter generally equal to the outer diameter of said fluid conduit, and means on said insert gripping and retaining the yieldable fluid conduit against longitudinal movement of the fluid conduit relative to the housing means.

3,843,170

JOINTS FOR CONDUITS HAVING A CONTINUOUS CORROSION-RESISTANT LINING

Luigi Bagnulo, Via Alessandro Volta 18, Milan, Italy

Filed July 10, 1972, Ser. No. 270,571
Claims priority, application Italy, July 9, 1971, 26857/71
Int. Cl. F16l *9/14*
U.S. Cl. 285—55 **5 Claims**



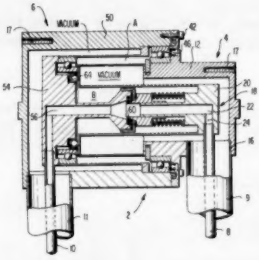
1. An arrangement for connecting the opposite ends of said pipe sections to form a continuous conduit adapted to convey corrosive liquids, said arrangement comprising two metal pipe sections provided with a corrosive-resistant coating at the inner surfaces thereof which covers also end faces of the pipe sections and part of the outer surface thereof adjacent said end faces; a pair of sockets one for each pipe section, each socket having at one end an inner diameter substantially equal to that of the outer diameter of the respective pipe section and being fixedly connected at said one end with the respective pipe section spaced from the end faces of the latter and projecting with the remainder thereof having a greater diameter than that at said one end beyond said end face of the respective pipe section; a sleeve at each end face of said pipe sections, said sleeve af a material resistant to heat and to the corrosive influence of the liquid to be conveyed between the end faces of said pipe sections; connecting means including a connecting member between said sleeves and said other ends of said sockets connected to said pipe sections, said connecting member having an outer tubular wall portion of a diameter substantially equal to that of said other ends of said sockets and inner tubular wall portions connected to said outer tubular wall portion and having a diameter substantially equal to that of said pipe sections, and a pair of weld seams serving to connect said outer tubular wall portion at opposite ends to said other ends of said sockets with said inner tubular wall portions abutting against said sleeve, each of said sleeves having a portion located inwardly of the respective weld seam, whereby during forming of the weld seam damage to the coating by heat is prevented.

3,843,171

CRYOGENIC TRANSFER SWIVEL

James A. Hewlett, Forest Park, Ohio, assignor to KDI Corporation, Cincinnati, Ohio

Filed Jan. 26, 1973, Ser. No. 326,656
Int. Cl. F16l *17/00*
U.S. Cl. 285—98 **8 Claims**



1. A swivel connection assembly for rotatably and detachingly connecting two insulated fluid conveying conduits together while allowing rotational movement of the conduits relative to each other comprising, a first and a second connector each of said first and second connectors having a passage formed therethrough for connection with said insulated conduits, said first and second connectors adapted for sealing engagement with each other to communicate the passages fromed therein, said first and second connectors being rigidly mounted within a first and a second housing, respectively, in spaced-apart relationship therewith, each of said first and second housings being open at one end and having a passage formed through the walls thereof for sealing connection with the exterior surfaces of said first and second insulated fluid conveying conduits, respectively, clamping means for retaining said first and second housings in assembled relationship and bearing means for effecting relative rotational movement between said housings, first dynamic sealing means formed between first and second connectors at the area of engagement with each other and surrounding the passages therethrough for maintaining a sealed connection therebetween and second dynamic sealing means formed between said second connector and an end surface of said first housing to form a sealed chamber surrounding said first and second connectors at the area of engagement therebetween.

3,843,172

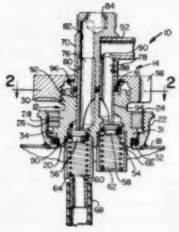
KEG TAPPING DEVICE HAVING IMPROVED SEALING MEANS

Frederick F. Stevens, Jr., Fairfield, Conn., assignor to Hoff-Stevens, Inc., Ansonia, Conn.

Filed Sept. 26, 1973, Ser. No. 401,026
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **8 Claims**

1. In a keg tapping device the combination comprising a first unit adapted to be mounted in the tapping opening of a keg and having a first bearing surface exposed externally of

the keg and two side-by-side passageways passing therethrough and opening through said first bearing surface for communicating with the interior of the keg, a second unit movable between connected and disconnected positions relative to said first unit and having a second bearing surface thereon and two passageways passing therethrough and arranged to communicate respectively with the two passageways in the first unit when the second unit is in its connected position relative to said first unit, said second unit having a pair of generally cylindrical tubular probes projecting in parallel side-by-side relation from said second bearing surface, each of said probes communicating with an associated one of said passageways in said second unit and being insertable into and axially slidable relative to an associated one of said passageways in said first unit as said second unit is moved into its connected position relative to said first unit, said first and second bearing surface being disposed in parallel relation to each other when said second unit is in its connected position relative to said first unit, means for maintaining a minimum predetermined distance between said first and second bearing



surface when said second unit is in its connected position relative to said first unit, a unitary elastomeric seal member assembled with said second unit in bearing engagement with said second bearing surface and including a pair of generally annular portions integrally connected in adjacent relation to form a generally figure-eight shaped configuration, each of said generally annular portions having a generally cylindrical aperture receiving an associated one of said probes therethrough, said seal member having an axis of symmetry intersecting the axes of said probes and dividing each of said annular portions into two symmetrical portions, each of said generally annular portions having a generally ellipsoidal peripheral configuration and a major axis extending transversely of said axis of symmetry, said sealing member in assembly with said second unit and before said second unit is moved into said connected position having an axial thickness greater than said minimum predetermined distance, said sealing member in said connected position being in sealing engagement with said first and said second bearing surface, and means for moving said second unit to and retaining it in said connected position.

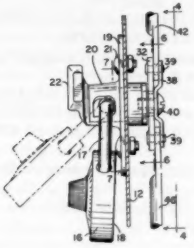
3,843,173

T-TYPE LOCKER HANDLE

Bob G. Harrell, Greenwood, Miss., assignor to Jackes-Evans Manufacturing Company, LeFlore, Miss.

Filed Mar. 12, 1973, Ser. No. 340,207
Int. Cl. E05b *13/08, 65/02*
U.S. Cl. 292—7 **11 Claims**

1. A locker assembly including a frame, a door hingedly mounted on said frame for opening and closing movement with respect thereto, handle bearing means mounted on said door, handle means being mounted in said handle bearing means for rotation relative to said door about a central axis, said handle means being used in latching, unlatching and opening and closing said door, and latching means mounted on said handle means and movable on rotation thereof with respect to said door to engage and disengage said frame and thereby latch and unlatch said door from said frame, at at least one point on said frame, said handle means and said handle bearing means being formed with cooperative openings in each to receive a locking means to prevent relative movement therebetween, said handle means comprising an integrally formed, generally T-shaped member having a gripping portion joined to a generally cylindrical stem portion, and disposed generally transverse thereto, said central axis of rotation of said handle means being disposed longitudinally and centrally



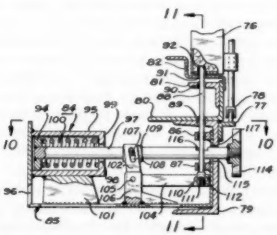
through said stem portion, said stem portion and said gripping portion being rotatable about said central axis relative to said door, said gripping portion being offset from said central axis thereby to allow a locking means having a shackle disposed through an opening formed in said stem portion to be pivoted upwardly adjacent said gripping portion to provide access to the back of said locking means to open said locking means or obtain information therefrom.

3,843,174

ANTI-THEFT DOOR-LOCKING APPARATUS

Ronald A. Bogunovich, San Lorenzo, and Joseph V. Bogunovich, San Leandro, both of Calif., assignors to Henrietta A. Bogunovich, San Leandro, Calif., by said Joseph V. Bogunovich

Filed Dec. 29, 1972, Ser. No. 319,377
Int. Cl. E05b *65/16*
U.S. Cl. 292—166 **8 Claims**



1. Anti-theft door-locking apparatus for the access door to the freight compartment of an automotive van, railway car, on the like vehicle comprising: support structure adapted to be fixedly secured to such vehicle adjacent an access door to the freight compartment thereof, a locking pin carried by said support structure for reciprocal displacements between an active extended position in cooperative association with such door to constrain the same in the closed position thereof and an inactive retracted position releasing such door for movement; plunger means carried by said support structure for reciprocal movement between operative and inoperative positions respectively corresponding to the active and inactive positions of said locking pin and being connected therewith to

control the position of said locking pin; operating means for displacing said plunger into the operative position thereof; selectively operative energizing means requiring greater than manual force for displacing said plunger into the inoperative position to effect movement of said locking pin into its inactive position and thereby releasing the door for movement; and operative inhibiting means for holding said locking pin in its inactive position when such door is open.

3,843,175

SPRING ACTUATED LOCK FOR USE WITH MOTOR VEHICLE DOOR

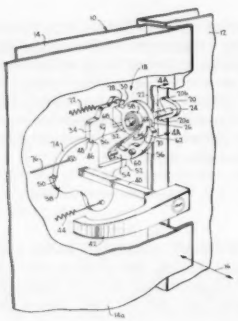
Horst Klebba, Weyhausen, Germany, assignor to Volkswagenwerk Akt., Wolfsburg, Germany

Continuation-in-part of Ser. No. 270,288, July 10, 1972, abandoned, Continuation of Ser. No. 125,963, March 19, 1971, abandoned. This application Jan. 19, 1973, Ser. No. 325,041

Claims priority, application Germany, Mar. 21, 1970, 2013690

Int. Cl. E05c *3/26*

U.S. Cl. 292—216 **8 Claims**



1. A spring actuated lock for use with a motor vehicle door assembly including a frame structure and a door structure comprising:

a trap lever mounted on one of said structures for movement between first and second positions;

a bolt element mounted on the other of said structures, said bolt element and said trap lever being relatively shiftable along a predetermined path of travel and being disposed for interengagement during said relative shifting,

said bolt element being disposed relative to the trap lever for contacting the latter and moving the trap lever from its first position and into its second position during said relative shifting;

operating lever means carried by the trap lever for movement therewith between said first and second positions;

control lever means mounted for movement between primary and secondary dispositions;

means coupled with the control lever for yieldably biasing the latter toward its secondary disposition and away from its primary disposition;

a locking mechanism including a shiftable member operably coupled to the operating lever means for shifting by the latter when the operating lever means moves between its said positions, said mechanism including respective cooperable parts on said member and on said control lever means, which parts are disposed in interengagement when the trap lever and therefore the operating lever means are in said first position and the control lever means is in its primary disposition for holding the control lever means in said primary disposition against the bias of the yieldably biasing means,

said parts being disposed in disengagement when the operating lever means is in said second position whereby the control lever means is released to permit movement of the latter from its primary disposition to its secondary disposition under the influence of the yieldably biasing means,

said trap lever being disposed in blocking relationship relative to the path of relative shifting of the trap lever and the bolt element when the trap lever is in its second position,

said locking mechanism including means for preventing movement of the operating lever means from said second position to said first position when the control lever means is in its secondary disposition whereby the relative shifting of the bolt element and the trap lever is prevented; and

an operator mechanism for shifting said control lever means from its secondary dispostion to its primary disposition to release the operating lever means for movement from its second position to its first position whereby to release the trap lever and the bolt element for said relative shifting.

3,843,176

LOCKING DEVICE FOR A SAFETY GRILL

Alfredo Gonzalez-Cuzan, 631 S.W. 23rd Rd., Miami, Fla. 33129

Filed Sept. 12, 1973, Ser. No. 396,543

Int. Cl. E05c *3/04*

U.S. Cl. 292—218 **7 Claims**

1. A locking device for a safety grill of the type used to protectively enclose a wall opening in a building structure such as a doorway or window comprising:

A. an outer tube extending through the building wall in a fixed relation therewith;

B. an inner tube, rotatably mounted in said outer tube;

C. a latch bar pivotally connected at its outer end to the grill and including an inner latch end for slidable engagement through the outer end of said outer tube into said inner tube;

D. manual control means fixed to said inner tube, extending inwardly of said outer tube, to selectively rotate said inner tube between first and second positions;

E. means within the inner tube, adjacent the outer end thereof, to engage said latch end when said inner tube is in said first position to lock the grill relative to the wall opening and to disengage said latch bar when said tube is in said second position to permit the grill to open relative to the wall opening.

3,843,177

DOOR LATCH CONSTRUCTION

Russell W. Waldo, St. Paul, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.

Filed Nov. 9, 1973, Ser. No. 414,364

Int. Cl. E05c *3/04*

U.S. Cl. 292—254 **3 Claims**

1. In a door latch mechanism:

a. a rigid latch hook having a base portion adapted to be

mounted on one side of a door for common movements therewith;

b. a cooperating strike element adapted to be mounted on a door frame in the path of travel of the latch hook, said strike element being yieldingly urged into said path of travel of the latch hook and retractable transversely out of said path;

c. said latch hook having a strike engaging cam portion and a strike engaging hook portion, the strike being engaged by said cam portion and retracted thereby during closing movements of said door and urged into engagement with said hook portion, when the door is fully closed;

d. a handle-equipped release member pivotally mounted on said latch hook for swinging movements toward and away from engagement with said strike, when the strike is in engagement with said hook portion;

e. stop means on said latch hook limiting movements of said release member in a direction away from engagement with said strike, said release member being urged toward engagement with said stop means by said strike, when the door is fully closed;

f. a locking element mounted for oscillatory movements between a release member engaging position, wherein said release member is blocked from engagement with said strike, and a release member disengaging position;

g. an operating lever mounted for limited pivotal movements on said latch hook and having an inner end portion engaging said locking element to impart said oscillatory movement thereto, and a second portion selectively movable into and away from a position to engage said strike upon closing movements of the door and responsive to movement of said lever to a release member engaging position of said locking element, to positively prevent closing of the door;

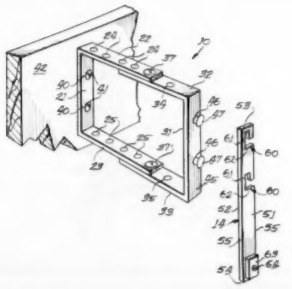
h. and a yielding element frictionally engaging said inner end portion of the operating lever to frictionally hold the lever at the limits of said pivotal movement thereof.

3,843,178

OVERHEAD HAND OPERATED DOOR LOCK

Alexander Eskoff, 4214 Euclid Ave., East Chicago, Ill. 46312

Filed July 5, 1973, Ser. No. 376,804
Int. Cl. E05c *17/04*
U.S. Cl. 292—262 **2 Claims**



1. A hand operated door locking device intended for use with a sliding overhead type door of the type commonly found on garages and the like, the door being slidable between an open horizontal position and a closed vertical position relative to a door frame defining a door opening, the door having a front surface facing the door opening, a rear surface, a top edge, and a bottom edge, the lock comprising:

bracket means adapted for mounting on the door frame above the top edge of the vertically closed door and projecting horizontally outwardly therefrom in a manner to overlap the thickness of the door;

a locking plate removably mounted on the bracket means adapted to project therefrom to a position adjacent the top edge portion of the back surface of the vertically closed door in the normal door trajectory when being opened in a manner to engage the top edge of the door upon any attempt to slide the door upwardly to its open horizontal position so as to prevent the opening of the door;

the bracket means comprising a first U-shaped member including a body portion and two spaced apart parallelly extending leg portions extending outwardly in the same direction from opposed ends of the body portion; a second U-shaped member having a body portion disposed parallel to the body portion of the first member and having a pair of parallel spaced apart leg portions extending outwardly from respective top and bottom ends of the body portion in planes parallel to each other; a series of openings spaced along the pair of leg portions of the first member with respective openings in each leg portion being in axial alignment with each other, the axis of the openings being substantially parallel to the axis of the first member body portion; a series of spaced apart openings extending along the pair of leg portions of the second member with each of the respective openings in each leg portion being in axial alignment with each other and with the axis of the openings extending substantially parallel to the axis of the second member body portion; the first member leg portions adapted to be placed in juxtaposition with the respective second member leg portions and to be telescoped relative thereto in an adjustable manner with the selected telescope position of the respective first and second members being retained by the alignment of respective openings in the different leg portions and axially inserting bolts through the respective aligned openings to secure the first and second members in the adjusted telescoped positions; the outermost surface of the second member body portion being provided with a pair of spaced apart pins projecting outwardly therefrom in a perpendicular manner thereto adapted for removable engagement with the locking plate, each pin projecting a distance slightly greater than the thickness of the associated locking plate, with each pin provided with an enlarged head portion thereon for utilization in retaining the locking plate in proper position on the bracket means; and

the locking plate is of an elongated rectangular configuration, the top portion of the locking plate provided with a pair of spaced apart L-shaped slots therein, the spacing between the L-shaped slots being substantially identical to the spacing between the pin projections on the second member body portion, each slot having a leg portion extending longitudinally of the locking plate with the bottom end of each leg portion connected to a foot portion of the slot which extends substantially perpendicular to the respective leg portion and opens out of one edge of the locking plate, the width of the foot and leg portions of each of the slots being slightly greater than the diameter of the pin projections and less than the diameter of the enlarged pin heads whereby the slots may be slidingly engaged onto the respective projecting pins and locked thereon in the leg portions of the slots for removable connection of the locking plate to the bracket means with the bottom end portion of the locking plate extending into the plane of opening and closing travel of the door in a manner to block the path of travel of the door and prevent opening of the same until after the locking plate is removed from the bracket.

3,843,179

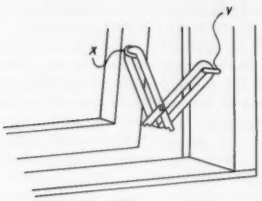
SAFETY DEVICES FOR WINDOWS AND DOORS

Svend Christian Reck, Karlebo, 2980 Kokkedal, Denmark

Filed Feb. 5, 1973, Ser. No. 329,897
Int. Cl. E05c *17/32*
U.S. Cl. 292—263 **1 Claim**

1. A safety device for use with a window and window-frame, a ringscrew mounted in each of said window and said window-

frame, said device comprising a system of two rigid bars, each bar having a first hook and a second hook, each of said second hooks having a tip defining an open beak, a rivet pivotally connecting the two bars to each other, said rivet passing through each bar between said first and second hooks, each said tip extending through one of said ringscrews, said bars



pivoting between two positions, the first hook of each bar extending from the rivet to the tip of the other bar in a first position, thereby blocking each open beak, the first hook of each bar pivotally removed from the tip of the other bar in a second position, thereby allowing each said tip to be inserted or removed from said ringscrews.

3,843,180

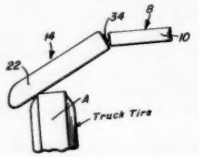
SAFETY BUMPER

Willie L. Alexander, Lima, Ohio, assignor to C. A. McCullen, Lima, Ohio, a part interest

Filed Jan. 22, 1973, Ser. No. 325,526

Int. Cl. B60r *19/04*

U.S. Cl. 293—74 **9 Claims**



1. For use on a motor vehicle, a safety-type bumper comprising a main body section of a length capable of spanning the associated body portion of said vehicle, and complemental spring-biased end sections pivotally mounted on the respective end portions of said body section, said end sections being normally and cooperatively aligned with said body section, being pressure responsive, and adapted to yieldingly pivot relative to said body section and (1) momentarily swing to a displaced position and (2) automatically spring back to and assume a normal position, said end sections being designed and adapted upon striking a relatively stationary obstruction to yield and swing in a horizontal plane on a vertical pivoting axis and are capable of swinging either forwardly or rearwardly relative to said main section depending upon the impact encountered.

3,843,181

ENERGY ABSORBING BUMPER

Alain Dera, and Daniel Besseau, both of Billancourt (Hauts de Seine), France, assignors to Regie Nationale Des Usines Renault, Billancourt, France; Automobiles Peugot, Paris, France

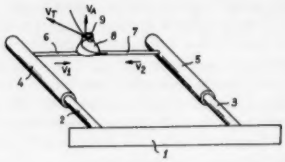
Filed Mar. 26, 1974, Ser. No. 454,999

Claims priority, application France, Apr. 3, 1973, 73.11934

Int. Cl. B60r *19/06;* **F16f** *9/28*

U.S. Cl. 293—86 **6 Claims**

1. Energy-absorbing bumper for motor vehicles, which comprises a buffer-forming bar and a pair of hydraulic shock-absorbers extending at right angles to said bar and spaced from each other, each shock-absorber comprising two main members movable in relation to each other, one member being connected to said bar and the other being adapted to be secured to the vehicle, and at least one conduit adapted to contain hydraulic fluid contained in the system between said



members and forced therethrough in case of shock, this assembly being characterized in that at least one conduit of each shock-absorber opens tangentially and in opposition to each other into a chamber of substantially tapered configuration having an outlet orifice adjacent its top and constituting the seat of a whirling motion in the fluid in case a state of unbalance develops between the pressures of the fluid delivered by the shock-absorbers, whereby the shock-absorbing capacity of the assembly is substantially independent of the point of impact of the shock along the bumper.

3,843,182

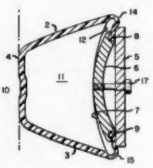
IMPACT CUSHIONING APPARATUS

Harold D. Walls, and Robert S. McGaughey, both of White Township, Pa., assignors to McCreary Industrial Products Co., Indiana, Pa.

Continuation-in-part of Ser. No. 258,753, June 1, 1972, abandoned, Continuation-in-part of Ser. No. 331,328, Feb. 9, 1973, abandoned. This application July 2, 1973, Ser. No. 375,542

Int. Cl. B60r *19/10*

U.S. Cl. 293—88 **21 Claims**

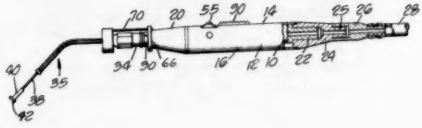


1. Impact cushioning apparatus comprising a mounting member adapted to be attached to the article to be cushioned, a contact member adapted to receive impact and be moved toward the mounting member thereby, one of those members being U-shaped in vertical cross section with the open end of the U facing the other member, and elastomeric means interposed between the contact member and the mounting member and affixed to the U-shaped member so that those means are stretched over the other member by that movement of the contact member towards the mounting member and retard that movement by that stretching, those means comprising a plurality of slabs of elastomer spaced from each other and positioned in planes parallel to said vertical cross section of the U-shaped member.

3,843,183
VACUUM PICK-UP INSTRUMENT

Clifford L. Hutson, 1860 Idlewood Rd., Glendale, Calif. 91202

Filed Aug. 16, 1972, Ser. No. 281,139
Int. Cl. B66c 1/02
U.S. Cl. 294—64 R **17 Claims**



1. In a vacuum-actuated pick-up instrument to be held in the hand of an operator for handling small objects, which instrument has an elongated body with a pick-up nozzle extending forwardly from the forward end of the body and a valve on said body for controlling vacuum at said nozzle,

the improvement comprising:

at least the tip portion of said nozzle being continuously rotatable;

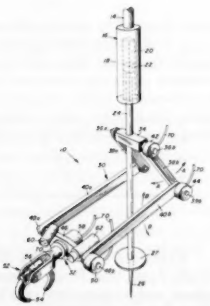
a manually rotatable control member on said body adjacent said valve;

and means drivingly connecting said manually operable control member to said tip portion of the nozzle for rotation thereof by remote control from the instrument body.

3,843,184
UNDERWATER SEARCH AND SALVAGE SYSTEM

Edward E. Horton, III, 85 Vanderlip Dr., Portugese Bend, Calif. 90274

Filed July 12, 1972, Ser. No. 271,064
Int. Cl. B63c 11/48
U.S. Cl. 294—66 A **5 Claims**



1. An underwater search and salvage system for locating and returning objects from the sea floor comprising

a pipe string extending downwardly from a surface ship;

a support;

a pointed member at the lower end of said support for penetrating the sea floor;

means for limiting the depth of penetration of said pointed member,

a vertically slidable coupler means between said pipe string and said support for reducing the effect of vertical sea surface movements of said ship but which transmits rotary movement to said support from said pipe string;

mounting means for a search and salvage device;

linkage means connected to said support for adjustably supporting said mounting means for vertical and horizontal movement with respect to said support;

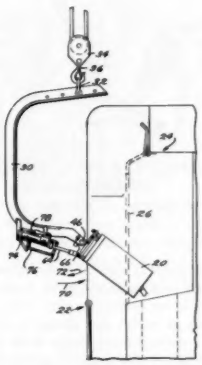
actuating means for moving said linkage means horizontally and vertically relative to said support;

whereby said mounting means is rotationally positioned by a rotation of said pipe string and horizontally and vertically positioned by action of said linkage means and said drive means therefor.

3,843,185
POWER ASSEMBLY REMOVAL TOOL

William R. James, Sunset View, and Charles J. Hardy, Cumberland, both of Md., assignors to The Chesapeake and Ohio Railway Company, Cleveland, Ohio and The Baltimore and Ohio Railroad Company, Baltimore, Md.

Filed Oct. 27, 1972, Ser. No. 301,336
Int. Cl. B66c 1/22
U.S. Cl. 294—67 AA **4 Claims**



1. An apparatus for removing a power assembly from a locomotive comprising:

a C-shaped boom member,

means pivotably attached to one end of said boom member for attaching to said power assembly, including a first plate, means for pivotably attaching said first plate to said boom, a second plate having curved portions for engaging upwardly extending portions of the power assembly and extending parallel to said first plate and overlying said first plate, means for attaching said second plate to said first plate and means for attaching said second plate to said power assembly, and

hydraulic piston means pivotably attached between said boom member and said first plate and attached to said first plate at a location separated from the point of attachment of said boom member to said first plate for causing said first and second plates to pivot about said point of attachment to said first plate to permit positioning or aligning said power assembly to effect removal of a power assembly attached to said second plate.

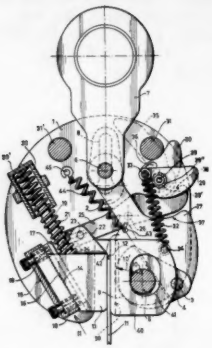
3,843,186
HOIST CLAMP

Martinus Bernardus Van de Wetering, Zeist, Netherlands, assignor to Interproduct N.V., Driebergen, Netherlands

Filed Apr. 18, 1972, Ser. No. 245,071
Claims priority, application Netherlands, Apr. 19, 1971, 715257; Feb. 1, 1972, 721281
Int. Cl. B66c 1/48
U.S. Cl. 294—101 **5 Claims**

1. A hoist clamp for clampingly gripping plate-shaped pieces to be hoisted, the clamp comprising a toggle lever system operatively connected with a hoisting eye and co-

operating with a wedge that is adjustable in the direction of the thickness of the plate material to be gripped, said wedge co-operating by means of toothed faces, with a stationary block and being arranged to be urged under the influence of spring pressure in the direction of the smallest thickness of said plate material after a locking mechanism acting upon the toggle lever system has been released; said locking mechanism comprising: a first pivotable lock member active for locking the wedge in its non-clamping condition, and a second pivotable lock member arranged to pivot in dependence upon pivoting movement of the first lock member, said first lock



member and said second lock member having a common pivot axis, said second lock member in its locking position acting upon the toggle lever system to lock this system in its most-folded condition in which the clamp is in its non-clamping condition, and a spring of the toggle lever system arranged to be active in the sense of straightening the toggle lever system and applying clamping force to the second lock member at such a point that the line of action of this spring in said most-folded condition is disposed on one side of said common pivot axis and such that upon pivoting of the lock members to unfold the toggle lever system the spring is further tensioned and said line of action passes to the other side of said common pivot axis.

3,843,187

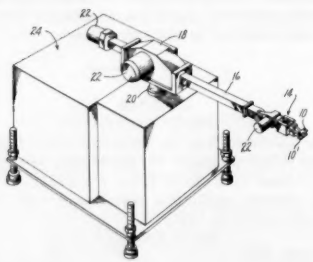
DEMI-DISCONNECTABLE FINGER

Hans F. Schaefer, Jr., and David W. France, both of West Newbury, Mass., assignors to USM Corporation, Boston, Mass.

Filed Mar. 9, 1973, Ser. No. 339,597

Int. Cl. B25j *15/00*

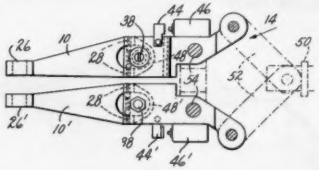
U.S. Cl. 294—106 **4 Claims**



1. Apparatus for releasably mounting an article engaging finger in a manipulator having a hand-type grasping device and comprising:

A. A support bracket;

B. A finger element mounted for limited movement on the support bracket;



C. A restraining clamp engaging the finger element to limit movement thereof;

D. Spring biased disconnecting means on the restraining clamp operatively connected to the finger element to release said finger element from the restraining clamp when excessive forces are applied to said finger element.

3,843,188

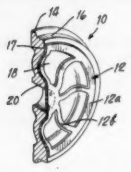
ROTATIONAL VIBRATION DAMPENING ASSEMBLY

Francis Kirschner, East Hills, N.Y., assignor to The Soundcoat Co., Inc., Brooklyn, N.Y.

Filed Jan. 11, 1973, Ser. No. 322,885

Int. Cl. B60b *7/04*, *17/00*; **F16h** *55/14*

U.S. Cl. 295—7 **6 Claims**



1. An assembly damped to reduce vibrations upon rotation comprising a ring of vibration damping material having spokes extending inwardly from said ring, said ring and spokes being adhered to a surface of a rigid structure that undergoes rotation, each of said spokes being comprised of segments partially overlapping each other, the overlapping one of said segments forming a continuation of the overlapped one of said segments.

3,843,189

VEHICLE ASSEMBLY KITS

Peter James Duff, Poole, and Denis Toomey, High Wycombe, both of England, assignors to Caravans International (motorised) Limited, Dorset, England

Filed Aug. 12, 1971, Ser. No. 171,145

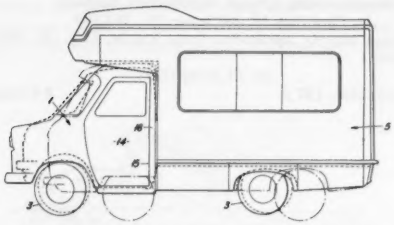
Claims priority, application Great Britain, Aug. 14, 1970, 39333/70

Int. Cl. B62d *27/00*

U.S. Cl. 296—1 R **4 Claims**

1. For use in the assembly of a standardized vehicle body onto one of a number of vehicle chassis having driving compartments of different shape, with access openings provided in the front wall of said body and the rear wall of said driving compartment in register, a kit of parts comprising a make-up unit for disposition between said compartment and said body, said make-up unit having portions shaped on opposite faces to engage snugly against respective contours of the portions of said compartment and said body which bound the sides and top of said openings, slots in said make-up unit, a number of clamping devices each receivable in one of said slots to secure

said body and compartment portions together with said make-up unit in a rigid and weather-tight structural connection, and

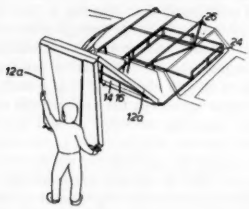


a masking infill securable to the peripheral portions of said body, compartment and make-up unit around said access openings.

3,843,190
TENT

Eric William Julian, Willowbrook Cottage, 10 Oundle Rd., Weldon, England

Filed June 9, 1972, Ser. No. 261,221
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **10 Claims**



1. A self supporting tent comprising a roof, sidewalls, and legs, said roof consisting of two sections, each section being shape-retaining and non-collapsible in itself and the sections being hinged together to define a container dimensioned to receive said walls and legs when said sections are swung together, means for connecting said legs to said roof in a position supporting said roof when said sections are swung apart, and means for connecting said walls to said roof.

3,843,191
CLIP-RETAINED, NOISE-SUPPRESSION MATERIAL FOR VEHICLE CABS

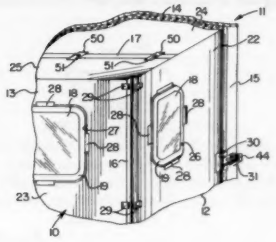
John R. Rediger, Washington, and David D. Hansen, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 26, 1973, Ser. No. 344,950
Int. Cl. B62d *33/06*
U.S. Cl. 296—39 A **9 Claims**

1. In a vehicle cab having a plurality of walls defining generally planar surfaces with edges therearound joined to form corners and supported by a plurality of horizontal and vertical beam members, generally planar panels contactingly positioned against said walls and similarly having edges therearound in juxtaposed relationship with the wall edges,

the improvement comprising a plurality of retainer clip means for releasably securing said panels in their contacting positions,

wherein said clip means comprise generally U-shaped edge retainer clips including generally parallel inner and outer legs joined by a bight portion so as to partially encompass the panel edge, an opening in said bight portion, and further including an edge clamping means comprising an

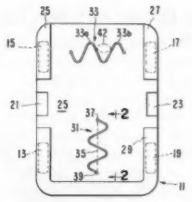


edge clamp having elongated leg inserted through said opening and having a lip portion thereof contacting said edge retainer clip, whereby said panels may be easily removed and installed by removing said retainer clip means.

3,843,192
STANDING PASSENGER SUPPORT STRUCTURE FOR A MOVING VEHICLE

Edgar A. Morgan, Palo Alto, Calif., assignor to Arrow Development Co., Inc., Mountain View, Calif.

Filed May 16, 1973, Ser. No. 360,795
Int. Cl. B60n *3/02*
U.S. Cl. 296—64 **7 Claims**



1. A movable passenger vehicle comprising a rigid structure associated with a floor for supporting standing passengers against movement in at least two generally orthogonal horizontal directions, said structure comprising a surface supported in a position substantially perpendicular to the floor an elevated distance therefrom in the region of human hips by rigid posts extending between the floor and the surface at its ends, said surface undulating in a direction along its length in a projection on the floor, the undulations including a plurality of continuous full cycles symmetrically positioned about an imaginary axis extending between said two supporting posts, the resulting undulations being broad enough to receive a standing human body shape at least a partial way therein.

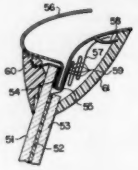
3,843,193
WINDSHIELD MOUNTING

Hans Krings, Aachen; Hans-Dieter Peetz, and Richard Crumbach, both of Richterich, all of Germany, assignors to Saint-Gobain Industries, Neuilly sur Seine, France

Filed July 21, 1972, Ser. No. 273,870
Claims priority, application France, July 28, 1971, 71.27589
Int. Cl. B60j *1/02*
U.S. Cl. 296—84 K **6 Claims**

1. A windshield mounting for releasably retaining a pane in an opening of a vehicle body, said mounting comprising first

means releasably retaining the pane in the opening, and second means operable to release the pane in response to impact effective thereon, said second means including a strip of textile longitudinally folded a predetermined number of times to form layers, and a plurality of rows of stitching in and longitudinally along the strip, each said row extending through and



interconnecting a number of said layers one less than the number connected by the next subjacent row, and means attaching the edges of the strip to and along the periphery of the opening in the vehicle body, and the periphery of the pane, respectively.

3,843,194

VEHICLE BODY COWL

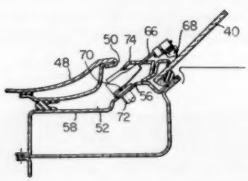
Kazuo Yamada, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 17, 1972, Ser. No. 307,391

Claims priority, application Japan, Nov. 17, 1971, 46-107584

Int. Cl. B60j 1/02; B60s 1/04

U.S. Cl. 296—84 R **2 Claims**



1. A body for a vehicle comprising, in combination, a rearwardly inclined windshield, a cowl structure having a transversely extending well therein disposed forwardly and beneath the lower edge of said windshield, said well having an access opening and including an upwardly inclined wall portion lying adjacent the lower edge of the windshield and a bottom wall portion and sloping downwardly toward the outside of said vehicle, said bottom wall portion of said well having formed therein a hole, an oscillatable pivot shaft disposed in said well and supported by said upwardly inclined wall portion of said well, a wiper arm drivingly connected to said pivot shaft within said well, a wiper blade carried by said wiper arm at an outer end of said wiper blade and movable between a substantially horizontal rest position and an operating position in engagement with said windshield, said wiper blade substantially horizontally extending slightly above the lower edge of said windshield when said wiper blade is pivoted to said rest position, and a cowl top grill detachably secured on said upwardly inclined wall portion of said well and reducing an effective area of said access opening.

3,843,195

HINGED DRAUGHT DEFLECTORS FOR VEHICLES

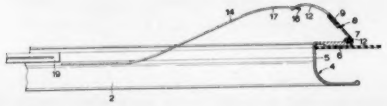
Frederick Charles Lidington, Birmingham, England, assignor to Weathershields Limited, Birmingham, England

Filed May 15, 1973, Ser. No. 360,563

Claims priority, application Great Britain, May 18, 1972, 23419/72

Int. Cl. B60j 7/22

U.S. Cl. 296—137 J **8 Claims**



1. A draught deflector for an opening roof of a passenger road vehicle of the type comprising a vehicle roof having a longitudinal opening therein, front and rear transverse members at opposite ends of said opening, longitudinally extending guide rails at opposite sides of said opening, and a longitudinally movable assembly slidably guided between said rails between a first position in which said opening is closed and a second position in which at least a portion of said opening at its front end is exposed, said draught deflector comprising a transverse flap, hinge means for pivotally connecting said flap to the upper face of said front member, a pair of blade springs having inner and outer ends, connecting means for connecting said inner ends to said guide rails, and coupling means coupling said outer ends to said flaps and so constructed and arranged that when the deflector is installed in a vehicle and at least said portion of said opening at said front end is exposed, resilience of said blade springs urges said flap into an operative rearwardly and upwardly extending position, said flap being urged into an inoperative position substantially parallel with an spaced above said first member upon depression of said blade springs by the engagement therewith of said longitudinally movable assembly as said assembly is moved into said first postion, wherein said outer ends of said blade springs are coupled to said flap for sliding movement relative thereto as said flap is moved between said operative and inoperative positions, and an engagement between each blade spring and said flap defines said operative position of said flap.

3,843,196

AUTO ARM REST

Albert C. Burke, 933 W. Collins Ave., Orange, Calif. 92667

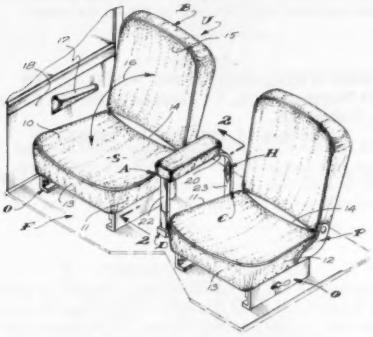
Filed Sept. 8, 1972, Ser. No. 287,584

Int. Cl. A47c 7/54; B60n 1/06

U.S. Cl. 297—417 **4 Claims**

1. A unitary, collapsible arm rest attachment for engagement on the floor of a vehicle between laterally spaced opposing inner sides of a pair of separate and independent forwardly disposed armless seat units secured to said floor and each including a seat with a top surface spaced above the floor and a back rest with a front surfaced projecting upwardly from the rear side of said top surface, said arm rest including a sectional, normally substantially rectangular frame arranged substantially rectangular frame arranged substantially parallel with and in spaced relationship between said inner sides of the seat units and including a lower, horizontal forwardly and rearwardly extending lower floor engaging rail, a vertical rear leg joined integrally with and projecting upwardly from the rear end of the lower rail, an elongate upper rail with a normally horizontal front portion and a downwardly and rearwardly extending rear portion, first hinge means connecting the rear end of the upper rail to the upper end of the rear leg, a normally vertical front leg comprising upper and lower sections, second hinge means connecting the upper end of the upper section to the front end of the upper rail, third hinge means connecting the lower and upper ends of the upper and lower sections together, a receiver at the forward end of the

lower rail normally receiving and releasably holding the lower end of lower section, an elongate arm rest secured to the top of the front portion of the upper rail and having a top rest surface normally spaced above the planes of the tops of the seats and extend forwardly from between the back rests and mounting means releasably securing the lower rail to the floor,



the axis of the first hinge means is spaced downwardly and rearwardly from the arm rest and from the planes of the top and front surfaces of the seat units, the vertical extent of the frame is greater than its fore and aft longitudinal extent of the frame and the longitudinal extent of the sections of the front leg are less than the longitudinal extent of the frame.

3,843,197

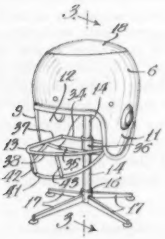
FOOTBALL HELMET STOOL

Thomas E. Wright, 1203 Chanticleer La., Hinsdale, Ill.

Filed Mar. 19, 1973, Ser. No. 342,619

Int. Cl. A47c *7/50*

U.S. Cl. 297—437 **8 Claims**



1. A football helmet stool comprising a base, a vertical tubular column fixed to the base and open at its top end, a football helmet shaped shell having a seat portion at its top and an open bottom at the face of its lower front a second tubular column open at its top end and slidable vertically in the first mentioned column through the open top thereof, means fixed to the underside of the seat portion of the shell and extending into the open top of the second mentioned column and serving to support the football helmet shell on said column with the shell adapted to swivel about the axis of said column, an abutment on the first mentioned column, a foot rest unit extending through said bottom open face in the shell and mounted on the first mentioned column to swivel thereon while resting on said abutment and having engagement with the shell whereby the shell and the foot rest swivel together.

3,843,198

ROCK SAMPLING TOOL

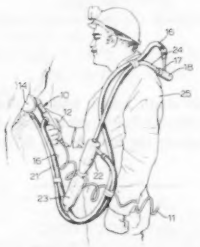
John Windley Reynolds, Kimberley, B. C., Canada, assignor to Cominco, Ltd., Vancouver, British Columbia, Canada

Filed Mar. 26, 1973, Ser. No. 344,638

Claims priority, application Canada, Mar. 30, 1972, 138576

Int. Cl. E21c *37/22*

U.S. Cl. 299—18 **7 Claims**



1. A rock sampling tool comprising, in combination, a compressed air operated driving mechanism, a rock cutting wheel operatively connected to said driving mechanism, a shroud substantially enveloping said rock cutting wheel excepting a segment of said cutting wheel projecting therefrom, a cyclone having a vortex outlet and a conical base with a dust sample collector removably attached to said conical base, an air ejector, connecting means to carry exhaust air from said driving mechanism to said air ejector for creating a low pressure zone therein, connecting means between the interior of the shroud and the cyclone and connecting means between the cyclone vortex and the air ejector low pressure zone whereby rock dust formed during operation of said cutting wheel is carried into said collector.

3,843,199

APPARATUS FOR VENTILATING AND PROVIDING DUST SUPPRESSION FLUID TO CUTTER-HEADS OF MINERAL MINING MACHINES

Harold Llewellyn Nash; John Ewards, and Charles Morgan Jones, all of Glamorgan, South Wales, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Apr. 23, 1973, Ser. No. 353,438

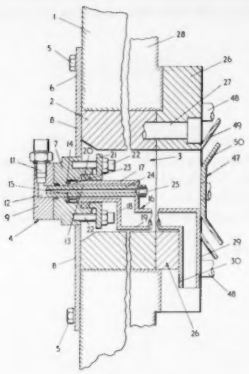
Claims priority, application Great Britain, May 19, 1972, 23621/72

Int. Cl. E21c *25/10*

U.S. Cl. 299—81 **8 Claims**

1. Apparatus for ventilating a mineral mining machine cutter head of the kind adapted to be drivably mounted on an axially bored driven shaft and provided with at least one outlet nozzle for dust suppression fluid, comprising a fixed component for fixed attachment to the machine adjacent to the end of the driven shaft remote from the cutter head, the fixed component having fluid inlet means and first and second fluid

outlet means, a nozzle interconnected to the first fluid outlet means for delivering an air flow-inducing jet of fluid along the



bore of the driven shaft, and a hollow elongated member connected to the second fluid outlet means for feeding dust suppression fluid along the bore of the driven shaft towards the cutter head.

3,843,200

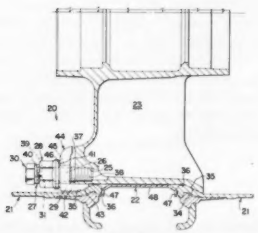
RIM MOUNTING

William D. Walther, Dayton, and Robert A. DeRegnaucourt, Centerville, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Filed Jan. 22, 1973, Ser. No. 325,654

Int. Cl. B60b *23/00*

U.S. Cl. 301—12 R **8 Claims**



1. An assembly for mounting of at least one rim having a mounting flange on the felloe of a wheel,

said assembly comprising a series of support studs, rotatable sleeve elements, fastening nuts and clamp elements,

said wheel having a series of axially directed bores adjacent said wheel felloe for securely mounting the axially inner portion of a support stud,

each support stud having an axially outer portion with external threads and movably mounting a sleeve element,

each sleeve element having external threads for rotatably mounting a fastening nut,

each fastening nut having radially oriented flange surface of engaging a clamp element,

each clamp element having an axially directed portion for engaging the rim mounting flange,

there being a cap head mounted on each support stud which when rotated will move a sleeve element and cause a fastening nut on said sleeve threads to engage a clamp element and move said clamp element axially toward the mounting flange,

said assembly including a radially oriented surface extending transverse the axis of each support stud, said surface providing a stop means to both limit the extent of axially inward movement of a sleeve element and to limit the extent of axially inward movement of a fastening nut and clamp element,

whereby, subsequent rotation of a fastening nut away from said cap head will fully seat the rim on the wheel.

3,843,201

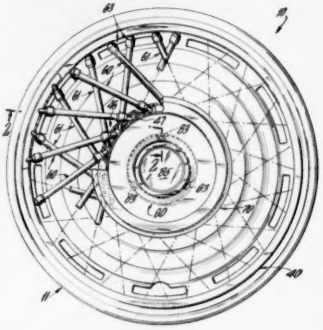
WIRE WHEEL SIMULATING WHEEL COVER

Herbert Buerger, Walton, N.Y., assignor to Del-Met Corporation, Walton, N.Y.

Filed Aug. 15, 1972, Ser. No. 280,827

Int. Cl. B60b *7/04*

U.S. Cl. 301—37 SS **18 Claims**



1. A wire wheel simulating wheel cover comprising, a single wheel cover member, an outer larger single ring coaxially fitted within said wheel cover members; a pair of telescoping assembled smaller rings coaxially fitted on said wheel cover member and being axially offset from said larger ring, said outer ring being formed with an upper circle of equi-angularly spaced holes and a lower circle of equi-angularly spaced holes and a lower circle of equi-angularly spaced holes, alternating with the holes in the upper circle, said telescoping rings having means to form upper and lower circles of openings corresponding to the upper and lower circles of openings in the larger ring, and wire wheel spoke simulating members inclined axially of said cover member and having their outer ends in holes of the larger ring and their inner ends in corresponding holes in said telescoping rings, and means to fix said pair of smaller rings to said cover member, said wire wheel spoke simulating members having means to hold said outer ring on said cover member.

3,843,202

SOLID TIRE WHEEL

Maurice Lacerte, 1561 4th St. P.O. Box 114, Grand-Mere, Canada

Filed Nov. 29, 1972, Ser. No. 310,499

Int. Cl. B60b *5/00*

U.S. Cl. 301—63 PW **8 Claims**

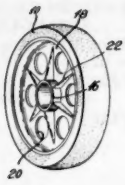
1. A wheel comprising

a rim having an outer face and side faces,

at least one circumferential groove on the outer face of said rim,

a plurality of spaced lateral holes in said rim communicating with said groove,

and a solid tire on said rim having one portion extending



into and filling said groove and said holes and having a second portion extending from said holes to the outer face of said rim and covering said side faces of said rim, the solid tire and said two portions being integral.

3,843,203

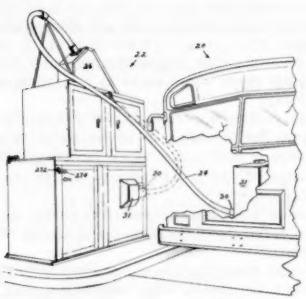
COIN HANDLING SYSTEM

Wesley A. Golland, Franklin Park; Eugene T. Mahoney, Chicago; Donald Minuk, Glenview, all of Ill.; Richard A. Pim, Mercerville, N.J.; Joseph Singer, Chicago, and Alvin A. Sugar, Schaumburg, both of Ill., assignors to Keene Corporation, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,663

Int. Cl. B65g *53/00*

U.S. Cl. 302—2 R **25 Claims**



1. A coin handling system for transferring coins from a receptacle to a depository comprising:

a receptacle having a chamber for holding coins, and air openings in said chamber;

a recess in said chamber;

a hose having means on one end adapted for insertion in the chamber recess, said means being operable to selectively establish an avenue for the flow of coins from the chamber into the hose;

a coin processor spaced from the receptacle and having a coin slow-down chamber therein, and means connecting the outlet end of said hose to the slow-down chamber;

vacuum generating equipment in said processor and a conduit connecting the slow-down chamber with an inlet to the vacuum equipment thereby providing an air flow path including the inlet at the means attached to the hose end, the hose, slow-down chamber, conduit and inlet to the vacuum equipment;

said vacuum equipment having an outlet for discharging air to the atmosphere;

coin conveying means located adjacent said coin slow-down chamber for receiving coins therefrom and discharging them into said depository;

control means connected to said vacuum equipment for controlling the operation thereof and the application of a suction at the inlet to said hose for transferring said coins to said depository;

an escrow door attached to said slow-down chamber; and an actuating device connected to said door for discharging the coins to the coin conveying means when the door is actuated to an open position;

whereby when the vacuum equipment is placed in operation and the means on said hose is inserted in the receptacle chamber recess, an air suction established at the inlet to the means on said hose, causes atmospheric air to flow into the receptacle chamber and lift the coins into the inlet and carry them through the hose to the slow-down chamber, whereupon the coins are brought to a halt without mutilation, and subsequently discharged to the coin conveying means for transfer to the depository.

3,843,204

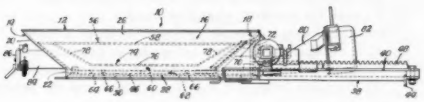
GRAVITY AND PNEUMATIC DISCHARGE ASSEMBLY FOR HOPPER

Robert T. Fischer, Homewood, Ill., assignor to Miner Enterprises, Inc., Chicago, Ill.

Filed Dec. 7, 1972, Ser. No. 312,871

Int. Cl. B65g *53/46*

U.S. Cl. 302—52 **7 Claims**



1. In a hopper outlet assembly, the combination of a main frame comprised of a front frame section and side frame sections and a rear frame section, said main frame adapted to be attached to a hopper bottom and defining a discharge opening with parallel horizontal side borders, a horizontal closure member normally closing said discharge opening, a hood unit including a hood member extending lengthwise of said main frame above said closure member and defining therewith a plenum chamber into which lading may flow, outlet conduit means communicating with said plenum chamber, and restriction means completely closing off a portion of said plenum chamber from air and lading whereby to constrict the flow of lading through the remaining portion of said plenum chamber.

3,843,205

FORWARD REVERSE DRIVE CONTROL PROVIDING AUTOMATIC BRAKING

Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 830,035, June 3, 1969, Pat. No. 3,606,906, which is a continuation-in-part of Ser. No. 689,549, Dec. 11, 1967, Pat. No. 3,458,018. This application June 3, 1971, Ser. No. 149,853

Int. Cl. F16d *41/22*

U.S. Cl. 303—1 **2 Claims**

1. In combination:

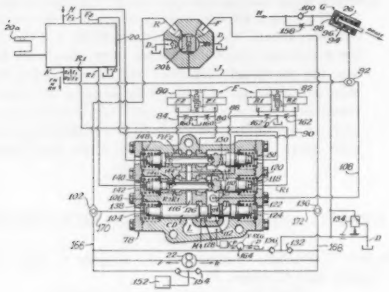
a control valve assembly comprising a housing having high (**126**), transfer (**110**), and low (**114, 116**) pressure chambers;

a common bore intersecting the chambers;

individual valve bores in communication with the transfer and low pressure chambers and with plural service passages (**84, 86, 88, 90**) in said housing;

first and second range selector valve elements (**F1 F2, R2 R1**) each shiftably disposed in a different one of the

individual valve bores, said valve elements being movable selectively from a position interconnecting the aforesaid low pressure chamber and the service passages to discreet operating positions at once interconnecting the transfer chamber and selected service passage and interconnecting the low pressure chamber and the unselected service passages;



a dump valve element (CD) shiftably disposed in said common bore and having an undisplaced, satisfied position interconnecting the transfer and high pressure chambers and a displaced, dump position interconnecting the transfer and low pressure chambers; and

means including pressure movable control means (**104**, 124) carried by the dump valve element for shifting same selectively to make available high pressure to, or to dump the pressure from, the transfer passage and the selected service passage.

3,843,206

BRAKING SYSTEMS FOR VEHICLES

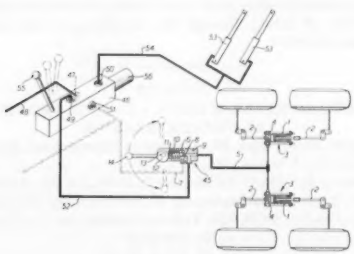
William Thomas Teagle, Blackwater, Truro, Cornwall, England

Filed Mar. 1, 1972, Ser. No. 230,908

Claims priority, application Great Britain, Mar. 1, 1971, 5648/71; Dec. 1, 1971, 55754/71

Int. Cl. B60t *13/22*

U.S. Cl. 303—7 **8 Claims**



1. A braking system for a tractor-drawn tipping trailer vehicle provided with hydraulically operated tipping gear, comprising spring means for applying each trailer wheel brake, means on the tractor vehicle for supplying hydraulic fluid under pressure through a hydraulic pressure line to release said wheel brakes against the action of said spring means, a control valve which is manually operable to vary the pressure at which said hydraulic fluid is supplied to said wheel brakes between a maximum at which the brakes are fully released and a minimum at which the brakes are fully applied, and a multi-position valve located in the hydraulic pressure line upstream of said control valve and manually operable to selectively direct fluid to said brakes and to said tipping gear.

3,843,207

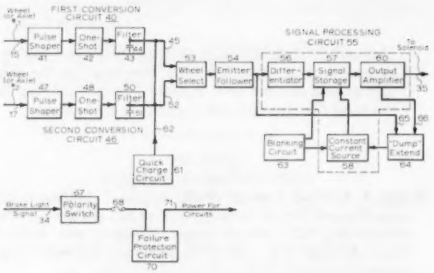
CONTROL SYSTEM REGULATED BRAKING ARRANGEMENT

Ronald L. Syria, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 2, 1972, Ser. No. 259,126

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **6 Claims**



1. A control system for a vehicle having a plurality of wheels, a braking system including a fluid under pressure, and means for providing an energizing signal responsive to issuance of a command to operate the braking system, which control system comprises:

a sensor positioned to provide an indication of wheel velocity;

a conversion circuit, coupled to said sensor, for providing a control signal which varies as a function of said wheel velocity;

a signal processing circuit, connected to receive said control signal, for providing an output signal responsive to a change in said control signal signifying that the rate of change of said wheel velocity has exceeded a preset value;

a pressure relief unit, connected to change the pressure in said braking system responsive to receipt of said output signal;

and which control system is characterized by a quickcharge circuit, coupled to said conversion circuit, for rapidly establishing an initial value of said control signal upon issuance of said command to operate the braking system, thus reducing the time interval required for said control signal to denote the actual wheel velocity.

3,843,208

ACCELERATION AND DECELERATION DIFFERENTIATOR CIRCUITS FOR A VEHICLE SKID CONTROL BRAKING SYSTEM

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 3, 1972, Ser. No. 268,401

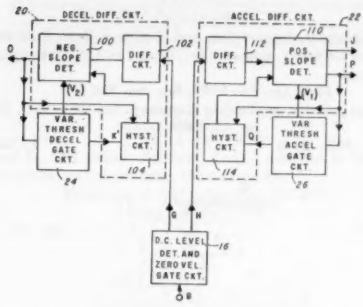
Int. Cl. B60t *8/12*

U.S. Cl. 303—21 R **14 Claims**

1. In a vehicle skid control braking system of the type that selectively controls engagement and disengagement of the braking system of a vehicle in accordance with selected braking conditions, a differentiator circuit comprising in combination:

first signal means responsive to a first signal representing vehicle wheel speed for generating a second signal representing a first condition corresponding to rate of change of the vehicle wheel speed;

second signal means responsive to said second signal and selectively altering the amplitude of said second signal for selectively controlling said first signal means when said



second signal reaches a first selected value of said first condition of the vehicle wheel speed; and

third signal means responsive to said second signal for selectively generating a third signal to provide a gate signal to said second signal means and for providing said first selected value to said first signal means.

3,843,209
HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

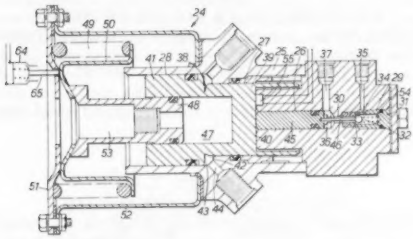
Brian Ingram, Balsall Common, and David Anthony Harries, Shirley, both of England, assignors to Girling Limited, Birmingham, England

Filed Sept. 22, 1972, Ser. No. 291,237

Claims priority, application Great Britain, Sept. 22, 1971, 44272/71; Nov. 27, 1971, 55159/71; Apr. 11, 1972, 16530/72

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **24 Claims**



1. An hydraulic braking system for a vehicle comprising a wheel brake, a master cylinder for controlling the pressure of hydraulic fluid applied to the wheel brake, a modulator interposed between the wheel brake and the master cylinder for isolating the wheel brake from the applied pressure and for reducing the braking pressure, an electrical switch arranged between two parts of the modulator which move relatively to each other when the modulator is actuated, movement of the parts operating the switch, and control means sensitive to the deceleration of the braked wheel for actuating the modulator when the deceleration exceeds a threshold value, .he control means subsequently deactivating the modulator so that the pressure can increase again, the cycle of reducing and increasing pressure being repeated until the deceleration of the wheel during the same brake application, is less than the threshold value, said control means including an adhesion detector logic circuit capable of deciding whether a wheel deceleration greater than the threshold value indicates that the wheel is skidding, and the switch operates hold means for holding the braking pressure substantially constant for an interval of time while the logic circuit is deciding.

3,843,210
ANTI-SKID SYSTEMS

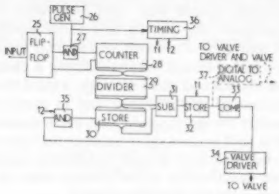
Donald Portas, Cotesbach near Rugby, and John F. B. Aubury, Coventry, both of England, assignors to Dunlop Limited, London, England

Filed June 30, 1972, Ser. No. 268,075

Claims priority, application Great Britain, July 7, 1971, 31778/71

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **8 Claims**



1. A vehicle anti-skid system comprising a first pulse generator arranged to produce an electrical signal at a frequency directly proportional to the angular velocity of a braked wheel of the vehicle and a flip-flop arranged to change state each time a pulse is received from the first generator, one state of the flip-flop being arranged to initiate a count in a digital counter and the other state of the flip-flop being arranged to terminate the count, a further higher frequency pulse generator being connected between the flip-flop and counter so that the counter records the number of pulses received from the higher frequency pulse generator between successive pulses from the lower frequency pulse generator thus providing a count which is inversely proportional to the angular velocity of the braked wheel, and means responsive to the output of said counter for controlling the braking of said wheel.

3,843,211
ANTI-SKID HYDRAULIC BRAKING SYSTEMS

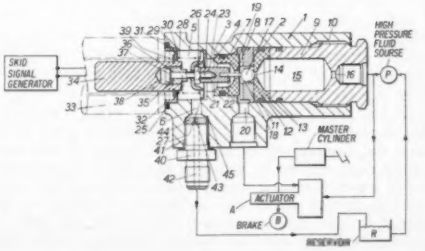
Brian Ingram, Balsall Common; David Anthony Harries, Solihull, and Lancelot Phoenix, Birmingham, all of England, assignors to Girling Limited, Birmingham, England

Division of Ser. No. 105,356, Jan. 11, 1971, Pat. No. 3,738,387. This application Mar. 14, 1973, Ser. No. 340,949

Claims priority, application Great Britain, Feb. 28, 1970, 9769/70; Mar. 18, 1970, 13116/70

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **5 Claims**



1. An anti-skid hydraulic braking system comprising means for supplying hydraulic fluid under pressure to at least one

wheel brake, a hydraulically operated actuator for cutting off the supply of fluid to the brake and for modulating the braking pressure, a source of high pressure fluid for operating said actuator, a reservoir for supplying said source, a solenoid-operated control valve for selectively controlling fluid flow between said source and said actuator and between said actuator and said reservoir, and means for activating said control valve in the event of a skid to allow fluid from said source to operate said actuator and relieve the braking pressure, the arrangement being such that, when the control valve is deactivated, fluid returning from said actuator to said reservoir allows the braking pressure to increase, said control valve comprising a housing, a first seating in said housing between a first port connected to said source of high pressure fluid and a second port connected to said actuator, a valve member normally engaged with said first seating, a second valve seating in said housing spaced from said first valve seating, a solenoid, an armature for moving said valve member away from said first seating and towards said second seating upon energization of said solenoid, means defining a chamber between said first and second valve seatings, a third port in said housing connected to said reservoir and in communication with said chamber through said second valve seating, and a flow restrictor in said control valve between said chamber and said reservoir, said restrictor serving to delay the reapplication of the brake on deactivation of the control valve so that the braking pressure does not increase sharply.

3,843,212

ANTI-LOCK VEHICLE BRAKE SYSTEMS

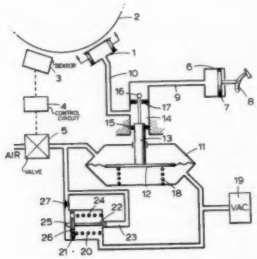
Derek Robert Skoyles, Salford, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,609

Claims priority, application Great Britain, Apr. 28, 1972, 19849/72

Int. Cl. B60f *8/06*

U.S. Cl. 303—21 F **4 Claims**



1. An anti-lock vehicle brake system comprising, a fluid pressure source, a fluid pressure line connected between said source and a wheel brake, fluid pressure cut-off means located in said line and effective on displacement to provide a fluid pressure seal between the source and the brake and also to increase progressively the volume of the space available for fluid at the brake side of the seal so that fluid pressure at the brake is reduced, a servo mechanism having a diaphragm to which said cut-off means is connected and which is displaceable in response to a fluid pressure difference across it to cause the displacement of said cut-off means, an anti-lock control valve adapted for actuation in response to an output from a wheel movement sensor, a first connection from said servo mechanism, which first connection is adapted to be opened by said anti-lock control valve, when the latter is actuated, to cause said fluid pressure difference across said diaphragm, and a second connection including a restricted fluid path through which fluid pressure at opposite sides of said diaphragm is equalized, at a rate determined by the restriction afforded by said path, when the anti-lock control valve is re-closed following opening thereof.

3,843,213

VEHICLE BRAKING SYSTEM

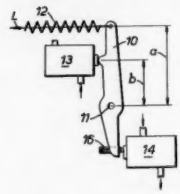
Dieter Schroder, Bassenheim, and Wolfgang Hess, Rubenack, both of Germany, assignors to Girling Limited, Birmingham, England

Filed Jan. 16, 1973, Ser. No. 324,167

Claims priority, application Germany, Jan. 18, 1972, 4239

Int. Cl. B60t *8/18*

U.S. Cl. 303—22 R **5 Claims**



1. A dual hydraulic vehicle braking system having two separate pressure circuits, comprising a pair of load-conscious braking pressure regulating valves respectively connected to said separate circuits, a transmission linkage having a mechanical connection with both of said regulating valves, and means for sensing vehicle loading and for applying a force to the transmission linkage at a fixed point thereon in dependence upon said vehicle loading, said transmission linkage transmitting said force to the valves, wherein said linkage is operative to divide said force between said valves when both circuits are operative and to transmit substantially the whole of said force to one of said valves in response to failure of said circuits connected to the other of said valves.

3,843,214

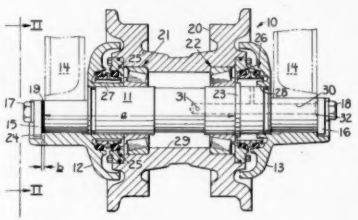
ADJUSTABLE TRACK ROLLER ASSEMBLY

Donald A. Piepho, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1972, Ser. No. 296,955

Int. Cl. B62d *55/20*

U.S. Cl. 305—14 **12 Claims**



1. An adjustable roller assembly comprising

a shaft mounted on a stationary support,

a roller,

axially spaced first and second annular bearing means, each having inner and outer races, rotatably mounting said roller on said shaft,

first abutment means solely abutting an outboard side of the inner race of said second bearing means for urging said second bearing means towards said first bearing means,

releasable second abuttment means, positioned outboard of

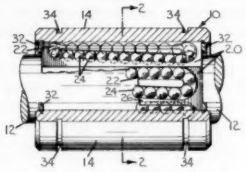
said first bearing means, abutting said support to selectively fix the axial length between said first and second abutment means, and

removable shim means positioned axially between said shaft and said second abutment means for selectively imposing a predetermined preload on said bearing means by adjusting the axial length between said first and second abutment means.

3,843,215
LINEAR BEARING

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1973, Ser. No. 347,079
Int. Cl. F16c *31/06*
U.S. Cl. 308—6 R **7 Claims**

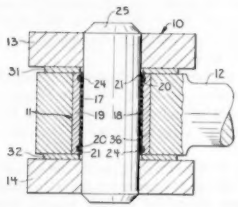


1. An anti-friction ball bearing assembly comprising an outer sleeve and an inner sleeve concentrically fitting within said outer sleeve, said inner sleeve having a central opening for the passage of a shaft therethrough, balls, the inner sleeve having a number of tracks defining paths for the circulation of said balls between said sleeves and said shaft during relative movement between said shaft and said bearing assembly, the outer surface of the inner sleeve being polyhedronal in shape, the inner surface of the outer sleeve being provided with a number of guideways, the intersections of the plane portions defining the outer surface of the inner sleeve registering with said guideways, said inner surface of the outer sleeve is further provided with a number of substantially concave bearing surfaces aligned with said tracks such that they provide a rolling bearing surface for said balls while said balls are in their loaded state, the portion of that path during which said balls are in their loaded state being slightly skewed with respect to the longitudinal axis of said bearing assembly.

3,843,216
CYLINDRICAL BEARING ASSEMBLY

Trevor G. Campbell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 11, 1972, Ser. No. 314,148
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **12 Claims**



1. In combination a first member, a second member, and a cylindrical bearing assembly, said assembly comprising; a cylindrical bearing sleeve member having an integral bearing surface thereon and having axially spaced opposite end portions, bearing support means mounted within said first member for retaining and rigidly supporting said unitary bearing sleeve member, said cylindrical bearing sleeve member being coaxial with and mounted within said bearing support means and said bearing support means extending axially beyond said axially-spaced opposite end portions of said cylindrical bearing sleeve member, seal means mounted upon said bearing support means and located proximate said axially spaced opposite end portions upon said portions of said bearing support means which extend axially beyond said opposite end portions of said bearing sleeve member for sealing said bearing surface against debris, and retaining means formed by said bearing support means for retaining said bearing sleeve member and for retaining said seal means within said bearing support means and for limiting axial movement of said bearing sleeve member and said seal means.

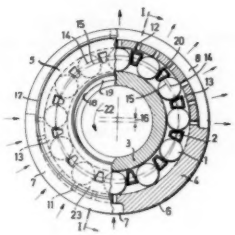
ERRATUM

For Class 308—187 see:
Patent No. 3,843,962

3,843,217
ANTIFRICTION BEARING

Albert Henning, Attenberg-Schildchen 14, 5202 Hennef/Sieg, Germany

Filed Aug. 2, 1973, Ser. No. 384,928
Claims priority, application Germany, Aug. 7, 1972, 2238820
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 **14 Claims**

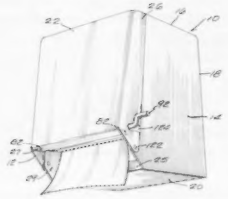


1. An antifriction bearing in which rollers are disposed between inner and outer races and roll therebetween as the races rotate relatively; spacer means arranged in a circular path and extending axially between said rollers, end rings connected to said spacer means and closing the annular gaps between said races at the ends thereof, each of said spacer means having circumferential surfaces engaging the adjacent rollers and converging in the radially inward direction so that radial inward movement of a said spacer means will be accompanied by movement of the adjacent rollers away from each other while radial outward movement of a said spacer means will be accompanied by movement of the adjacent rollers toward each other, guide means on one of said races engaging said end rings and causing eccentric movement of said end rings relative to said races as said rollers roll between said races and carry said spacer means and end rings therewith, and fluid connections extending into the space between said races in the circumferential regions thereof where said rollers are moving away from each other and toward each other respectively.

3,843,218
ROLL TOWEL DISPENSER

Archie S. Krueger; Norman J. Slye, and James A. Diring, all of Green Bay, Wis., assignors to Alwin Manufacturing Company, Inc., Green Bay, Wis.

Filed Mar. 6, 1973, Ser. No. 338,482
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **8 Claims**

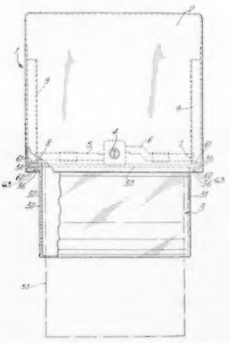


1. A towel dispensing cabinet comprising spaced side walls, a rear wall and a bottom wall defining a cabinet interior, a drive roller assembly, means for pivotally mounting said drive roller assembly to said side walls for movement between an operative position with said assembly located within said side walls and a swing-out position outwardly of said side walls, a cabinet cover having side flanges and means for pivotally mounting said cover to said housing to afford movement about a pivotal axis offset from said axis of said drive roller assembly and from a position wherein said cover side flanges are located exteriorly of and in overlapping relation with said side walls enclosing said pivotal mounting of said drive roller assembly and to an open position for access to the cabinet interior, said cover and said bottom wall having spaced edges to define a dispensing outlet.

3,843,219
TOWEL DISPENSER

Antonio Macchi Cassia, La Milan, Italy, assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Nov. 21, 1973, Ser. No. 417,713
Claims priority, application Great Britain, Apr. 12, 1973, 17673/73
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **12 Claims**

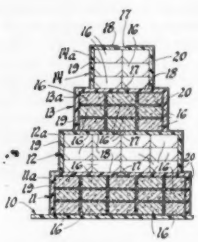


1. A towel dispenser of the continuous loop type comprising a housing having associated therewith a loop of towel that extends along an exit path out of said housing to an exposed position accessible to a user and thence along a return path into said housing, towel dispensing apparatus mounted in said housing for dispensing clean towel from a supply thereof into said housing and from said housing into the loop along the exit path when the accessible portion of the loop is pulled by a user, loop take-up means mounted in said housing and coupled to said towel dispensing apparatus for retracting and storing in said housing soiled towel from the return path when the accessible portion of the loop is pulled by a user, a receptacle suspended exteriorly of and beneath said housing for accommodating therein a supply of clean towel exteriorly of said housing, rails respectively mounted on the opposite sides of said housing adjacent to the lower end thereof, and first support members mounted respectively on the opposite sides of said receptacle adjacent to the upper edge thereof and disposed adjacent to the rear edge thereof and engaging said rails and second support members mounted respectively on the opposite sides of said receptacle adjacent to the upper edge thereof and disposed adjacent to the forward edge thereof and engaging said rails, said rails and said support members suspending said receptacle from said housing and accommodating transverse sliding movement of said receptacle between a towel dispensing position disposed immediately below said housing and an intermediate position wherein said second support members clear said rails and accommodate subsequent pivotal movement of said receptacle between said intermediate position and a towel servicing position spaced forwardly of said housing and from said towel dispensing position and with the forward edge of said receptacle pivoted about said first support members downwardly away from said housing to provide ready access to the interior of said receptacle.

3,843,220
SIMULATED CAKE AND CONTAINER FOR CUT AND WRAPPED CAKE PIECES

William Snider, Detroit, Mich., assignor to Wanda Snider, Detroit, Mich., a part interest

Filed Feb. 16, 1972, Ser. No. 226,810
Int. Cl. A47b *17/04, 97/00*
U.S. Cl. 312—204 **6 Claims**



1. A multiple layer simulated cake and container structure comprising:

a. a base plate;

b. a plurality of hollow containers disposed on said base plate in a stacked vertical arrangement with each container being constructed for holding a plurality of cut and wrapped pieces of cake, separate from the plurality of cut and wrapped pieces of cake in the other containers;

c. said containers being of increasing size from the uppermost one downwardly;

d. each of said containers having continuous side walls, and being open at the lower end thereof and closed at the top end thereof by an integral top end wall that carries the cut and wrapped pieces of cake in the next above disposed container;

e. retainer means for releasably retaining said containers against lateral movement relative to each other, and the lowermost container against lateral movement on the base plate and which permits the containers to be removed, successively, starting from the uppermost one, for dispensing the cut and wrapped pieces of cake; and,

f. said containers having the outer surfaces coated with real decorative icing.

3,843,221
CENTRAL STORE FOR RECORD SUPPORTS

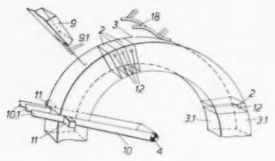
Zahnert Klaus, and Jurgen Hauptvogel, both of Dresden, Germany, assignors to VEB PENTACON DRESDEN Kamera- und Kinowerke, Dresden, Germany

Filed Dec. 19, 1972, Ser. No. 316,469

Claims priority, application Germany, June 27, 1972, 164104

Int. Cl. A47f *1/00*; **A47b** *53/00*

U.S. Cl. 312—223 **11 Claims**



1. In a storage apparatus for record supports in which a number of record supports are situated in independent storage units, which in their turn are accommodated in open ended storage compartments arranged radially in at least one axially mounted drum, the provision of:

a. a driving shaft carrying said drum,

b. means for effecting continuous drive of said drum through said shaft to allow continuous scanning and access to said storage units,

c. means in each compartment for detachably securing said storage units within said compartments,

d. means within each compartment to effect release of said storage units from said compartments,

e. a feed station mounted in a fixed position in the apparatus for receiving storage units, and

f. a drag arm mounted to rotate about said shaft and serving for the receiption of a storage unit from the feed station and capable of rotation about said shaft asynchronously with respect to the rotational speed of the drum to enable the storage unit to be introduced into its appropriate compartment.

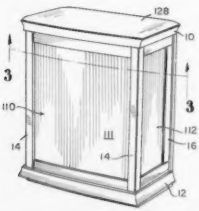
3,843,222
CLOTHES HAMPER

Earl E. Berkun, Indianapolis, Ind., assignor to Cosco, Inc., Columbus, Ind.

Filed Nov. 7, 1972, Ser. No. 304,396

Int. Cl. A47b *47/00*

U.S. Cl. 312—257 A **4 Claims**



1. A clothes hamper, comprising a top frame, a bottom frame, a floor extending across said bottom frame, means forming a downwardly open groove extending along the front, back and side stretches of said top frame, a plurality of first webs projecting downwardly from said downwardly open groove intermediate its width, means forming an upwardly open groove extending along the front, back and side stretches of said bottom frame, a plurality of second webs projecting upwardly from said upwardly open groove intermediate its width, said first and second webs dividing said grooves into inner and outer channels, front posts connected at their opposed ends to said grooves in said top and bottom frames, rear posts connected at their opposed ends to said top and bottom frames, said front and rear posts being received in the grooves in said top and bottom frames with said front posts in alignment with said first and second webs, a first panel selectively received in the inner and outer channels in said top and bottom frames for selectively enclosing the front and sides of said hamper inside or outside the extent of said front and rear posts and said first and second webs, and a second panel received in said top and bottom frame grooves and connected to said rear posts for enclosing the back of said hamper.

3,843,223
GARBAGE BIN

Walter Schneider, Unterenggstrasse, Langnau (Zurich), Switzerland

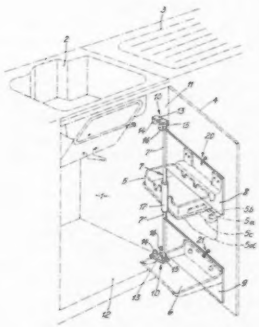
Division of Ser. No. 216,575, Jan. 10, 1972, Pat. No. 3,788,720.

Claims priority, application Switzerland, Mar. 12, 1971, 3680/71; May 27, 1971, 7759/71; June 7, 1971, 8264/71; Sept. 7, 1971, 13135/71

This application Mar. 12, 1973, Ser. No. 340,186

Int. Cl. A47b *81/00*

U.S. Cl. 312—274 **1 Claim**



1. The combination with a kitchen cabinet having a door swingable about a vertical axis to expose a compartment, of a garbage bag holder received in said compartment and swingable with said door, said garbage holder comprising:

a pair of bearing assemblies mounted in said compartment and each comprising a bracket adapted to be affixed to a wall of said compartment and a respective bearing sleeve, the bearing sleeves opening toward one another adjacent said axis;

a rod assembly comprising a pair of axially aligned rod sections having opposite ends respectively received rotatably in said sleeves, and proximal ends reaching toward one another, and a connecting sleeve receiving said proximal ends, said connecting sleeve being formed with a pair of axially extending aligned bores separated by a transverse partition, each of said bores receiving a proximal end of one of said rod sections, at least one of said proximal ends being formed with a plurality of removable sections separated from one another by annular grooves in the respective rod section; a frame affixed to said first arm for releasably supporting a garbage bag in an open condition thereof;

a platform on said secondary arm for supporting the bottom of said sack; and

at least one hook engaging one of said arms and affixed to said door for effecting an outward swinging movement of said arms upon corresponding movement of said door.

3,843,224

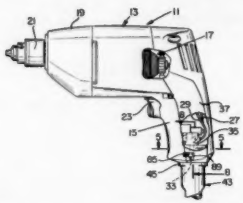
DETACHABLE CORD SET FOR ELECTRIC DEVICE

Burton Elwood Gerke, Jr., and Lewis Hampton Rohr, both of Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Dec. 21, 1972, Ser. No. 317,406

Int. Cl. H01r 11/02

U.S. Cl. 339—58 10 Claims



1. A detachable cord set construction in combination with an electric powered device comprising a housing having an electric motor therein, means defining an opening formed in the exterior of said housing, plug means carried by said housing and located in said opening and fixed relative to said housing, said plug means being electrically interconnected with said motor, an extension cord having a cord connector fitting into said housing opening, said cord connector having plug means electrically interconnecting with said plug means in said opening, said cord connector also having shoulder means thereon, locking means turnably mounted within said housing for movement through less than 180°, said housing including at least one aperture therein adjacent said locking means, said locking means including a portion extending outwardly of said housing through said aperture, said locking means further including at least one shoulder means adapted to engage said shoulder means on said cord connector, said locking means being movable from a first position allowing free insertion and removal of said cord connector to and from said housing opening, to a second position where said locking means securely retains said cord connector in said housing opening by engagement of said shoulder means on said locking means with said shoulder means on said cord connector

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3,843,225

METHOD OF HOLOGRAPHICALLY FORMING A THREE-DIMENSIONAL IMAGE FROM A SEQUENCE OF TWO-DIMENSIONAL IMAGES OF DIFFERENT PERSPECTIVE

Manfred Kock, Norderstedt, and Ulf Tiemens, Pinneberg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

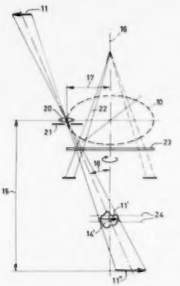
Filed Apr 4, 1973, Ser. No. 347,928

Claims priority, application Germany, Apr. 15, 1972, 2218384

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5 3 Claims

1. A method of forming a three-dimensional image from a sequence of two-dimensional images of an object from different perspectives, comprising the steps of recording a plurality of discrete two-dimensional shadow images of an object on a recording medium located in a plane with a source of penetrating radiation, each said image being formed with the source in a different position, a set of first imaginary lines, one first imaginary line passing through each source position and through a predetermined point of said object, each first imaginary line making an acute angle with a second imaginary line perpendicular to said recording plane and passing through said predetermined point of said object, removing the object and the source, subsequently placing a lens at positions corresponding to each of said source positions, locating the recorded shadow image corresponding to each of said positions at locations wherein the lens focusses two-dimensional secondary images of said recorded images on a given point on said second imaginary line with a depth of focus corresponding to the lens aperture and so as to define a set of third imaginary lines, one third imaginary line passing through each lens position, each corresponding recorded shadow image location, and said given point, each third imaginary line making the



same angle with said second imaginary line as the corresponding one of said first imaginary lines makes with said second imaginary line, illuminating each recorded shadow image with coherent radiation, placing a holographic recording medium in the path of the third imaginary lines on a side of the lens remote from the recorded shadow images, additionally illuminating the holographic recording medium with a coherent beam of reference radiation thereby holographically recording each recorded shadow image, and reconstructing the resulting holograms with a beam substantially identical with the reference beam used for recording whereby the individual images holographically reconstructed form an apparent three-dimensional image that is sharply focussed in a plane passing through said given point on said second imaginary line.

3,843,226

APPARATUS FOR PERIODICAL PARALLEL DISPLACEMENT OF AT LEAST ONE PARALLEL BEAM

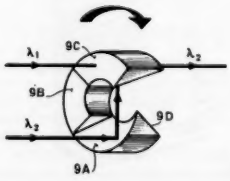
Tage Person, Kungsangen, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Mar. 12, 1973, Ser. No. 339,994

Claims priority, application Sweden, Mar. 24, 1972, 3830/72

Int. Cl. G02b 27/00

U.S. Cl. 350—6 9 Claims



1. System for periodically shifting a beam of light from a single source between two axially spaced paths, comprising an assembly rotatable about an axis generally parallel with the path of light from said source and subdivided into at least three angularly displaced segments, one of said segments

permitting said beam to pass through said assembly along a first path, the other two segments comprising respectively axially aligned radially spaced oppositely directed conically shaped reflectors arranged to transmit said beam impinging on one of said reflectors through said rotatable assembly and along a second path axially displaced with respect to said first path.

3,843,227

LIGHT DISSECTING OPTICAL SYSTEM

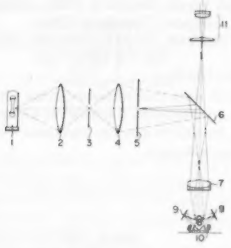
Jinichi Kato, Tokyo, and Katsuji Rikukawa, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 6,436, Jan. 28, 1970, abandoned. This application Feb. 15, 1972, Ser. No. 226,546

Claims priority, application Japan, Feb. 8, 1969, 44-9005

Int. Cl. G02b *21/18*

U.S. Cl. 350—33 **3 Claims**



1. A light dissecting optical system for examining a specimen comprising a main optical system positioned along a principal optical axis, including an objective, an eyepiece, and a semitransparent reflecting surface between the objective and the eyepiece disposed obliquely to the principal optical axis; an illuminating optical system including a light source and a condenser lens system having an iris variable diaphragm therein positioned along a second optical axis, the principal optical axis and the second optical axis intersecting each other at the semitransparent reflecting surface to direct light along the principal optical axis; a plate having a light entrance slit and disposed between said condenser lens system and said semitransparent reflecting mirror, the center of said light entrance slit being positioned on the second optical axis; a first set of reflecting surfaces and a second set of reflecting surfaces disposed on the object side of the objective, each set of reflecting surfaces being symmetrical about the principal optical axis, the first and second sets coacting to dissect the light and direct the dissected segments of light to the surface of a specimen, and further coacting to direct the light segments reflected from the surface of a specimen to the eyepiece through the objective and the semitransparent reflecting surface.

3,843,228

PRODUCTION OF LIGHT-CONDUCTING GLASS STRUCTURES WITH REFRACTIVE INDEX DISTRIBUTION

Mitsugi Yoshiyagawa, Takarazuka; Tomio Sugioka, Itami, and Yoshiro Ikeda, Nishinomiya, all of Japan, assignors to Nippon Selfox Kabushiki Kaisha (also known as Nippon Selfoc Co., Ltd.), Tokyo-to, Japan

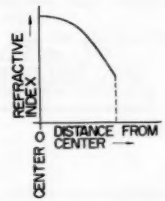
Continuation-in-part of Ser. No. 861,905, Sept. 29, 1969, abandoned. This application Aug. 2, 1972, Ser. No. 277,292

Claims priority, application Japan, Oct. 3, 1968, 43-72096; Dec. 6, 1968, 43-89786

Int. Cl. G02b *5/14*; **C03c** *15/00, 3/00*

U.S. Cl. 350—96 R **23 Claims**

1. A method of producing a light-conducting glass structure having a progressively varying refractive index distribution comprising: preparing a fiber glass body having a central axis and a uniform refractive index distribution and containing at least one kind of glass-forming oxide selected from the group consisting of SiO_2, B_2O_3 and P_2O_5 and at least one kind of modifying oxide capable of migrating through the glass body, the concentration of said modifying oxide being uniform throughout the fiber glass; and contacting the glass body with an agent having sufficient affinity for said modifying oxide to extract said modifying oxide from said glass body through the contact surface existing between the glass body surface and the agent and maintaining said glass body in contact with said



agent for a time duration sufficient to effect migration of said modifying oxide such that a greater amount of modifying oxide is extracted out of the surface region of said glass body through the contact surface than at places within the glass body distant from the surface region to thereby both progressively decrease the concentration of said glass-forming oxide and progressively increase the concentration of said modifying oxide from the contact surface toward said central axis to establish in the glass body a progressively varying refractive index distribution progressively increasing from the surface to said axis.

3,843,229

OPTICAL WAVEGUIDE HAVING A GRADED REFRACTIVE INDEX CORE FORMED OF SILICON AND GERMANIUM

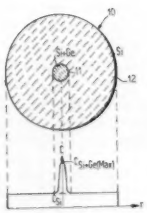
Dieter Rosenberger, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 16, 1972, Ser. No. 307,101

Claims priority, application Germany, Nov. 25, 1971, 2158515

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **5 Claims**



1. An optical waveguide having a refractive index which gradually decreases outwards from a core zone of said waveguide, said waveguide being composed of a base material which is composed of silicon and having germanium distributed therein so that the germanium decreases from *a* percent by weight at the center of said waveguide to 0 percent by weight at the outer periphery of said waveguide, wherein *a* is a value ranging from 1 to 10.

3,843,230

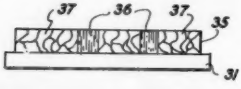
IMAGING SYSTEM WITH AN ALIGNED LIQUID CRYSTAL IMAGE CONTRASTED BY A NON-ALIGNED LIQUID CRYSTAL BACKGROUND

Werner E. L. Haas, Webster; James E. Adams, Ontario, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 173,532, Aug. 20, 1971, Pat. No. 3,803,050. This application Nov. 9, 1973, Ser. No. 414,571

Int. Cl. G02f 1/16

U.S. Cl. 350—157 6 Claims



1. An imaging method comprising

providing a substrate;

providing on said substrate an imagewise layer of an aligned liquid crystalline composition comprising nematic liquid crystalline material and an aligning agent, said aligning agent comprising a polyamide resin surfactant material, whereby said liquid crystalline composition spontaneously aligns with the major molecular axes of a substantial portion of the molecules of the liquid crystalline material substantially perpendicular to the plane of the substrate; and

providing on said substrate a layer of a non-aligned liquid crystalline composition in background configuration around said imagewise layer of the aligned liquid crystalline composition.

3,843,231

LIQUID CRYSTAL DIFFRACTION GRATING

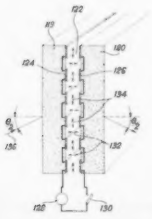
Joseph Borel, Echirolles; Jean-Claude Deutsch, Grenoble; Guy Labrunie, Seyssinet, and Jacques Robert, Grenoble, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Division of Ser. No. 245,238, April 18, 1972, Pat. No. 3,741,716. This application Feb. 14, 1973, Ser. No. 332,286

Claims priority, application France, Apr. 22, 1971, 71.14399

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC 2 Claims



1. A device for deflecting a light beam, comprising at least one liquid-crystal cell placed on the path of said beam and constituted by a film of liquid crystals interposed between two walls fitted with electrodes between which a potential difference can be applied by suitable means, wherein the incidence of said light beam is oblique with respect to the first wall-liquid crystal interface which is encountered and wherein use is made of liquid crystals for which the refractive index is dependent on the potential difference applied between said electrodes, wherein the electrodes are each formed by an array of identical conductive and transparent strips in parallel relation, the distance between two adjacent strips being equal to the width of the strips and each strip of one of said arrays being located opposite to one strip of the other array, and means for establishing a potential difference between the two electrodes, the establishment of said potential difference being such as to form a diffraction pattern by transmission.

3,843,232

ELECTROCHROMIC LIGHT MODULATING DEVICES HAVING A PALLADIUM COUNTER ELECTRODE

Donald Joseph Berets, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 16, 1973, Ser. No. 333,254

Int. Cl. G02f 1/36

U.S. Cl. 350—160 R 9 Claims

1. A variable light transmission device which comprises in combination an electrode, a persistent electrochchromic material, and a palladium counter-electrode capable of sorbing and desorbing hydrogen.

3,843,233

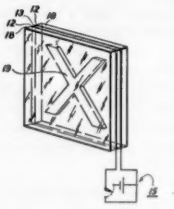
AN ALIGNING AGENT FOR LOWERING THE THRESHOLD VOLTAGE REQUIRED TO EFFECT AN OPTICALLY NEGATIVE TO OPTICALLY POSITIVE PHASE TRANSITION

Werner E. L. Haas, Webster; James E. Adams, Ontario, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 173,532, Aug. 20, 1971, Pat. No. 3,803,050. This application Nov. 9, 1973, Ser. No. 414,596

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC 14 Claims



1. A method for producing an optically negative to optically positive phase transition in an initially optically negative liquid crystalline composition comprising

providing an optically negative liquid crystalline composition comprising cholesteric liquid crystalline material and an aligning agent which tends to align the molecules of the cholesteric liquid crystalline material;

providing a layer of said liquid crystalline composition on a substrate; and

applying an electrical field across said liquid crystalline layer within the optically negative-optically positive phase transition electrical field strength range of said liquid crystalline composition.

3,843,234

ACOUSTIC OPTICAL ELEMENT UTILIZING UNIVALENT MERCURY HALOGENIDE CRYSTALS

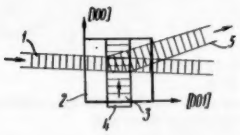
Georgy Fedorovich Dobrzhansky, ulitsa Dm. Ulyanova, 3, kv. 90, Moscow; Barta Chestmir, ulitsa Narodna obrana, 21, Praha; Leonid Mikhailovich Belyaev, ulitsa M. Ulyanovoi, 3, korpus 2, kv. 5, Moscow; Iraida Mikhailovna Silvestrova, ulitsa Vavilova, 37a, kv. 62, Moscow, and Jury Vladimirovich Pisarevsky, Svobodny prospekt, 4, kv. 66, Moscow, all of U.S.S.R.

Filed May 30, 1973, Ser. No. 365,178

Claims priority, application U.S.S.R., Oct. 6, 1972, 1833921; Oct. 6, 1972, 1835118

Int. Cl. G02f *1/32*

U.S. Cl. 350—161 **4 Claims**



1. An acousto-optical element in the form of a crystal body, which transmits elastic waves and electromagnetic radiation in the visible and infra-red spectral regions and diffracts a light wave at an elastic wave, with the element utilizing univalent mercury halogenide crystals.

3,843,235

IMAGE FORMING OPTICAL SYSTEM WHEREIN DEFOCUS IMAGES ARE IMPROVED

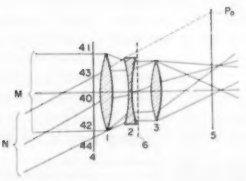
Masayuki Mino, and Yukio Okano, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Continuation of Ser. No. 143,269, May 13, 1971, abandoned, which is a continuation of Ser. No. 855,290, Sept. 4, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 299,802

Claims priority, application Japan, Sept. 14, 1968, 43-66302; Dec. 29, 1968, 44-768; Jan. 28, 1969, 44-6538

Int. Cl. G02b *5/22*

U.S. Cl. 350—205 **10 Claims**



1. An image forming optical system comprising:

an image plane;

a light converging means including compound lenses for forming a real image of an object on said image plane; and

an optical element having a light absorbing means for affording such property of transmission distribution to the optical element as the transmission monotonously decreases with an increase of distance in the radial direction in the optical member and the characteristic curve of the distribution is symmetric relative to the center of said optical element, said optical element being disposed perpendicularly to an optical axis of said light converging means with the center of the element being matched with said optical axis of said light converging means so that the optical element provides an aperture of said light converging means with the transmission distribution and said optical element being disposed at a position at which a principle ray of an oblique light beam capable of reaching the image plane crosses the optical axis whereby suitable defocused images may be obtained for beams both parallel and oblique to the optical axis.

3,843,236

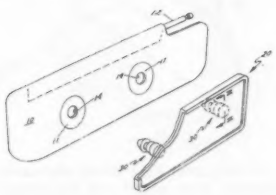
SHATTER-RESISTANT MIRROR MOUNTING

Arthur W. Kurz, Jr., Birmingham, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Filed Nov. 24, 1972, Ser. No. 309,276

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **17 Claims**



1. In a shatter-resistant mirror assembly for use within vehicles comprising a caseless mirror including in combination a glass base; a reflective means on said base; a solid body forming an integral, self-supporting, shatter-preventing, backing support of a resinous material having at least a substantial portion thereof a predetermined thickness of sufficient dimension to provide the sole support for said mirror, said backing support being secured to substantially all portions of the back of said mirror with sufficient high bonding tenacity to tightly retain all fragments of glass on said support in the event of breakage under impact, the composition of said resinous material being such that when said backing support has said predetermined thickness, it will have sufficient flexibility, integral strength, and toughness to allow displacement of portions of said glass when broken under impact without breakage or tearing of the resin backing; the improvement comprising mounting means molded integrally with said backing support from said resinous material for mounting said mirror to a support located within said vehicle; said mounting means including at least one projection extending outwardly of said backing support and having flexible retaining flange means for passing into and engaging a portion of means defining an aperture approximating the external dimension of said projection in a support on a vehicle and retaining said assembly to the support after such passage, said retaining flange means having a width dimension greater than the width of said aperture and including means for flexing during passage through said aperture whereby said retaining flange means expand to its original configuration after passage through said aperture and engage said portion of said means defining said aperture.

3,843,237

PRISMATIC REAR VIEWING SYSTEM FOR MOTOR VEHICLES

Stanley E. Smith, Dayton, and James R. Steck, Brookville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

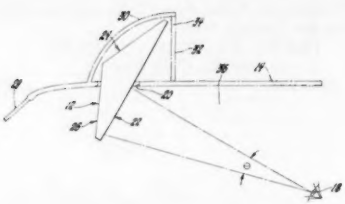
Filed Sept. 27, 1972, Ser. No. 292,527

Int. Cl. G02b *5/08*

U.S. Cl. 350—302 **4 Claims**

1. A prismatic rear viewing system for a motor vehicle having an opening in the roof thereof, comprising: a generally

triangular prism adapted to be laterally positioned in said opening above and below said roof, said prism including first, second and third angularly related transparent plates having interior surfaces defining an elongated cavity, said first plate facing the driver of the vehicle, said second and third plates being disposed at equal acute angles with respect to said first plate and converging at an obtuse angle rearwardly of said first plate, reflective surfaces on the exterior surfaces of said second and third plates, means at the ends of said plates closing



said cavity, a transparent fluid filling said cavity, said fluid having a refractive index which with the refractive index of said plates and the angles therebetween will cause an image incident on said first plate to be refracted to one of said reflective surfaces for refraction and reflection back toward the exterior surface of said first plate at an angle greater than the critical angle for the plates whereby the image will be totally internally reflected therefrom to the other reflective surface for reflection therefrom to said first plate and transmission to said driver.

3,843,238

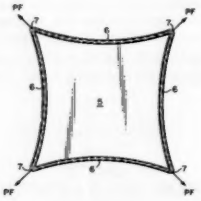
REFLECTOR

Frank C. Rushing, Ellicott City, Md.; Lynford W. Gilbert, Palos Verdes Peninsula, Calif.; Norman P. Williams, Linthicum Heights, and Albert B. Simon, Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 883,018, Dec. 8, 1969, abandoned. This application Sept. 27, 1972, Ser. No. 292,706

Int. Cl. G02b *5/08*

U.S. Cl. 350—310 **5 Claims**



1. A reflector comprising,

a flexible reflector membrane having a perimeter defined by a continuous series of tension-reinforced concave edge regions which meet at spaced-apart apices support points.

3,843,239

PHASE SHIFTING PLATE HAVING UNIFORM TRANSMITTANCE

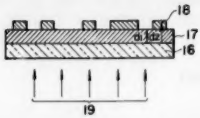
Yoshito Tsunoda, and Yoshinori Miyamura, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,421

Claims priority, application Japan, May 15, 1972, 47-47185

Int. Cl. G02b *5/28*

U.S. Cl. 350—314 **5 Claims**



1. A phase shifting plate comprising:

a transparent base;

a first thin transparent film formed with a uniform thickness upon said transparent base; and

a second thin transparent film with a predetermined pattern formed upon said first thin transparent film;

the thicknesses of said first and second thin transparent films being so determined that the intensity of light transmitted through said phase shifting plate may be uniformly distributed over the whole surface thereof, wherein the thicknesses of said first and second thin transparent films are so selected as to satisfy the following relationships:

$$d = \lambda/2\,(\,n-1\,)\text{, and}$$

$$d_1 = \lambda/4n\,(\,m-n/n-1\,) > 0$$

where

d_1, d = thicknesses of the first and second thin transparent films, respectively,

n = index of refraction of said films,

λ = wavelength of incident light, and

m = a positive integer.

3,843,240

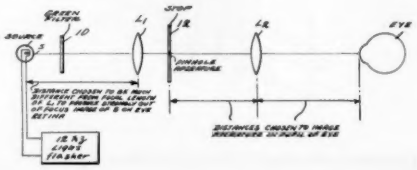
METHOD AND MEANS FOR RELAXING THE ACCOMMODATION OF THE EYE

Tom N. Cornsweet, Washington, D.C., assignor to Acuity Systems, Incorporated, McLean, Va.

Filed Oct. 27, 1972, Ser. No. 301,368

Int. Cl. A61b *3/12*

U.S. Cl. 351—2 **11 Claims**



1. A method for relaxing the accommodation of the eye, said method comprising:

flashing a source of light to produce a light output, placing a lens between the eye and source of light at a distance other than the lens focal length with respect to the source of light, refracting the light output with said lens to form a non-focused visual stimulus, and

directing said non-focused stimulus onto the retina of the eye.

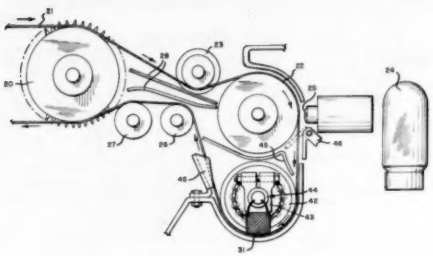
3,843,241
MULTIPLE SOUND SYSTEM FOR NARROW-WIDTH MOTION PICTURE SYSTEMS

Robert Swerdlow, Toronto, and Emil Schilder, Ottawa, Ontario, both of Canada, assignors to Cinacor, Ltd., Ontario, Canada

Continuation-in-part of Ser. No. 129,935, March 30, 1971, Pat. No. 3,795,440. This application Aug. 20, 1971, Ser. No. 173,580

Int. Cl. G03b *31/02*

U.S. Cl. 352—29 **3 Claims**



1. A sound reproduction system for a narrow-width motion picture system, comprising:

a. narrow-width motion picture film;

b. more than one continuous recording means disposed on said narrow-width motion picture film for recording more than one independent sound track;

c. a motion picture film projector for projecting said narrow-width film;

d. an adapter for said projector for permitting the playback of sound tracks recorded on said recording means, said adapter comprising a magnetic pick-up including a plurality of separate pickup heads disposed in a position adjacent the return film path, first idler means for tensioning said film, spring means for spring biasing said idler, second idler means for guiding said film, drum means for maintaining said film in alignment with said magnetic pickup head, said second idler means and said drum means cooperating together to press said film against said magnetic pickup head, and third idler means for directing said film back along the path defined by said sound drum;

e. a plurality of buss means each for transmitting the output of one of said pickup heads and each coupled to said one of said pickup heads;

f. more than one speaker means; and

g. more than one connector means each of said connector means for coupling one of said speaker means to a desired buss means for playing a selected sound track.

3,843,242
MOBILE MOTION PICTURE ENTERTAINMENT SYSTEM

Eugene J. Moscaret, Arcadia, and Thomas C. Soran, West Covina, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

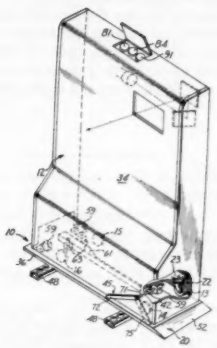
Filed June 7, 1973, Ser. No. 367,937

Int. Cl. G03b *29/00*

U.S. Cl. 352—132 **21 Claims**

1. In apparatus for providing motion picture entertainment in a vehicle having a floor structure, the improvement comprising in combination:

a removable motion picture projection unit having supporting wheels for movement of said unit in said vehicle; and means for temporarily retaining said unit against vehicle movements at a predetermined location inside the vehicle, including a plate structure for supporting said unit, means for attaching said plate structure to said floor structure at said predetermined location, fastening means having mating parts, said mating parts including a first fastener part oriented in a direction of motion of said removable projection unit and a second fastener part constructed to mate with said first fastener part, means for attaching said mating first and second fastener parts



to said projection unit and to said plate structure, respectively, means for guiding said first and second fastener parts into mutual engagement, including guide means on said plate structure and corresponding guide follower means on said projection unit, and actuable means for selectively locking said mating first and second fastener parts together when said projection unit is on said supporting plate.

3,843,243
DEVICE TO ADJUST APERTURE OPENING ANGLE OF MOTION PICTURE CAMERA

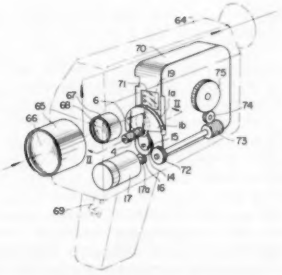
Tomoshi Takigawa, and Masamichi Toyama, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 18, 1973, Ser. No. 398,457

Claims priority, application Japan, Sept. 22, 1972, 47-95304

Int. Cl. G03b *9/10*

U.S. Cl. 352—209 **10 Claims**



1. In a device for adjusting the aperture opening angle of a motion picture camera in which the rotational speed of the shutter shaft in one cycle is relatively slow when a film is exposed and is relatively fast when the film is fed, the improvements comprising;

a first shutter blade engaged with the shutter shaft;

a second shutter blade idly engaged with the shutter shaft;

opening angle varying means for varying substantially the opening angle between the first and second shutter blades, said means having rotating means for making the first and second shutter blade rotate cooperatively;

first elliptical rotating means engaged with the shutter shaft;

second rotating means positioned in a contacting relation to the first rotating means;

driving means for driving the second rotating means; and

adjusting means for varying the relative position between the second rotating means and the first rotating means and varying substantially a proper opening angle formed between the first and second shutter blades.

3,843,244

APPARATUS FOR OBTAINING CONTINUOUSLY TRANSFORMING PROJECTED IMAGES

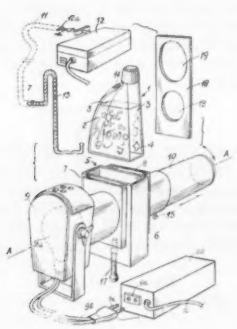
Bruno Facchini, Milan, Italy, assignor to Alden Research Foundation

Continuation-in-part of Ser. No. 774,896, Nov. 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 656,895, July 28, 1967, abandoned. This application Apr. 5, 1971, Ser. No. 131,111

Claims priority, application Italy, Nov. 18, 1967, 22852/67; Aug. 4, 1966, 18044/66

Int. Cl. G03b *21/00*; **G09f** *13/24*

U.S. Cl. 353—2 **2 Claims**



1. An apparatus for obtaining continuously transforming projected images, comprising a projector with a light beams generating source of light and a screen surface at a distance from the projector, said projector directing said light beams according to its optical axis against said screen, at least one container of transparent material, said container containing a number of variously colored translucid movable substances, supporting means on said projector to support said container within the path of said light beams, said light beams passing through said container and the substances contained therein and projecting their images on said screen surface, means for agitating said movable substances, wherein, according to the improvement, said container has contained therein at least two non miscible translucid differently colored liquids and wherein said container has the shape of a flat box and said supporting means are in the form of a pocket adapted to receive said box shaped container, said pocket extending across the optical axis of the projector and wherein one of said liquids has a specific weight greater than the other of said liquids, and wherein said means for agitating the liquids is a pressurized fluid circuit including a pumping device, said pumping device injecting pressurized fluid into the container at the bottom zones of said container.

3,843,245

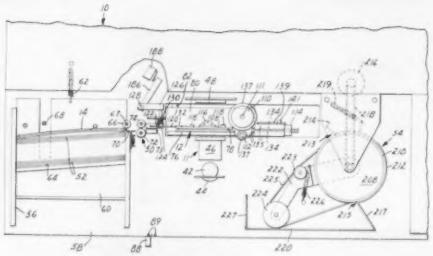
CARD HANDLING MECHANISM

John L. Sundquist, Roseville, and Lloyd W. Martin, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 12, 1972, Ser. No. 217,312

Int. Cl. G03b *23/08*, *1/48*

U.S. Cl. 353—27 **6 Claims**



1. A mechanism for handling microfilm aperture cards in a microfilm print-out machine requiring scan exposure of the microfilm by moving the microfilm at a predetermined rate through the light path of an optical projection station, said mechanism comprising:

a platen at the projection station having a supporting surface and being mounted for movement between a first and a second position with the supporting surface oriented at a right angle to the light path;

means for moving the platen from said first position to said second position at said predetermined rate;

means for feeding aperture cards seriatim to said platen from a plurality of microfilm aperture cards stored on said mechanism;

means for positioning a microfilm aperture card fed to said platen by said feeding means in a predetermined position along said supporting surface with its microfilm positioned to traverse the light path upon movement of the platen from its first position to its second position;

means for ejecting an aperture card from said platen;

means for clamping an aperture card against said platen, said clamping means comprising:

a clamping plate;

means mounting said clamping plate for movement relative to the platen between a release position to afford movement of an aperture card between the clamping plate and the platen and a clamping position for clamping a single aperture card to said platen; and

means for biasing the clamping plate to the clamping position; and

a drive mechanism operably coupled between said feeding means, positioning means, clamping means and ejection means for operating said feeding means and ejection means, for moving the clamping plate to its release position during feeding of an aperture card to the platen by said feeding means and ejection of an aperture card from said platen by said ejection means, and for affording movement of the clamping plate to its clamping position under the influence of said biasing means upon positioning of said aperture card along said supporting surface by said positioning means, said drive mechanism including an arm adapted to engage said clamping means and being mounted for movement between a first position affording movement of said clamping plate between its clamping and release positions independent of said drive mechanism and a second position engaged with said clamping means to position said clamping plate in its release posi-

tion against the bias of said biasing means, said clamping means being adapted for manual engagement to afford manual movement of said clamping plate to said release position against the bias of said biasing means when said arm is in said first position to afford manual insertion or removal of an aperture card on the platen.

3,843,246

STORAGE MAGAZINE FOR DIAPOSITIVE SLIDES

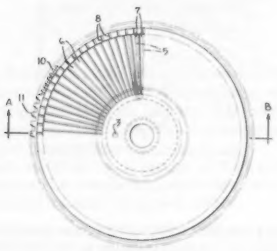
Hans Werner Johannsen, Braunsfeld, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Feb. 20, 1973, Ser. No. 333,713

Claims priority, application Germany, Feb. 22, 1972, 2208127

Int. Cl. G03b *23/06*

U.S. Cl. 353—117 **7 Claims**



1. A circular storage magazine for storage of slides and for use with a slide projecting apparatus, comprising a base unit having a plurality of storage slots for storing slides having a predetermined thickness therein, insert means adapted to be inserted into said base unit of said storage magazine for subdividing said slots into a pair of slots for storing slides having a smaller thickness, said insert means for subdividing the storage slots being adapted for removable mounting on said base unit of said storage magazine, said base unit comprising a central recess, said insert means comprising a central hub means and a plurality of radially directed web means connected to said hub means, said hub means adapted to fit into said central recess of said base unit when inserted and, said web means subdividing said storage slots of said base unit into smaller slots, the number of said web means corresponding to the number of slots of said base unit, and securing means for securing said insert means against rotation when inserted into said base unit.

3,843,247

INTEGRALLY MOLDED CIRCULAR TRAY FOR PHOTOGRAPHIC SLIDES

Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

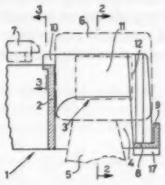
Continuation-in-part of Ser. No. 180,400, Sept. 14, 1971, Pat. No. 3,790,269, and a continuation-in-part of Ser. No. 276,962, Aug. 1, 1972, and a continuation-in-part of Ser. No. 278,765, Aug. 8, 1972. This application Mar. 23, 1973, Ser. No. 344,224

Claims priority, application Germany, Mar. 30, 1972, 7212170

Int. Cl. G03b *23/06*

U.S. Cl. 353—117 **7 Claims**

1. A circular tray for holding photographic slides in a series of radially extending compartments, said tray comprising an inner cylindrical wall, and outer cylindrical wall of less height than the inner cylindrical wall, a series of radial partitions extending from the inner cylindrical wall to the outer cylindrical wall, each partition having a central zone in which the cross section of the partition is tapered downwardly from a relatively thick upper edge to a substantially thinner lower edge, an inner zone radially inwardly from said central zone,



and an outer zone radially outwardly from said central zone, the cross section of the partition being tapered upwardly in said inner zone and in said outer zone.

3,843,248

EXPOSURE TIME CONTROL DEVICE FOR USE IN CAMERAS

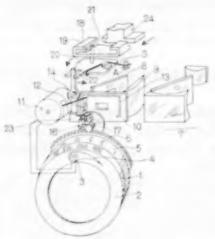
Sadaomi Iyama, and Yasuo Uchida, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1973, Ser. No. 335,924

Claims priority, application Japan, Mar. 1, 1972, 47-20569

Int. Cl. G03b *7/02, 7/16, 17/20*

U.S. Cl. 354—32 **3 Claims**



1. A camera comprising an automatic exposure control mechanism, a flashmatic mechanism for controlling a diaphragm in accordance with focus adjustment in flash-photography, a first member for indicating a diaphragm aperture value in association with the automatic exposure control mechanism, a second member for indicating a diaphragm aperture value in association with the flashmatic mechanism, and a means for detachably mounting a flash device on said camera, said first indicating member being adapted to move in response to shutter speed adjustment of the automatic exposure control mechanism, said second indicating member being adapted to be observed when the flash device is mounted on the mounting means.

3,843,249

EXPOSURE CORRECTION FACTOR SETTING INDICATOR FOR CAMERAS

Mashio Kitaura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1973, Ser. No. 429,277

Claims priority, application Japan, Dec. 29, 1972, 47-1516

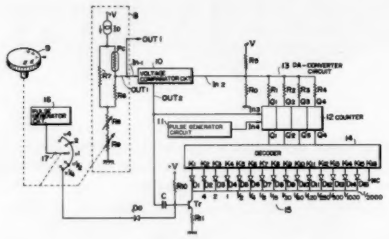
Int. Cl. 354 *289;* **G01j** *1/44;* **G03b** *17/18*

U.S. Cl. 354—60 **6 Claims**

1. An exposure correction factor setting indicator for cameras of the type having a digital exposure value indicator unit

for indicating the exposure value in a digital form by means of light emitting elements, in which at least one light emitting element is selectively lighted to indicate a corresponding error correction factor and when the exposure correction factor is set at a value other than a normal value, said at least light emitting element corresponding to that value is intermittently turned on and off to indicate an unusual exposure correction factor setting, said indicator comprising:

a. a pulse generator circuit for producing a pulse of a period



corresponding to the ON-OFF period of the light emitting elements;

b. a switching circuit connected between the light emitting elements and a power source, and controlled by the pulse derived from said pulse generator circuit; and

c. changeover means ganged with an exposure correction factor setting member for disposing said switching circuit in a condition to be switched on and off in accordance with the pulses derived from said pulse generator circuit when the exposure rate of the exposure rate setting member is set at a value other than normal.

3,843,250

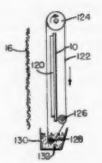
IMAGING SYSTEM EMPLOYING ION-PERMEABLE CONTROL MEMBER

Richard A. Fotland, Warrensville Heights, and Virgil E. Straughan, Euclid, both of Ohio, assignors to Horizons Incorporated, a Division of Horisons Research Incorporated, Cleveland, Ohio

Continuation-in-part of Ser. Nos. 178,521, Aug. 27, 1971, Pat. No. 3,797,926, and Ser. No. 275,674, Aug. 2, 1972, Pat. No. 3,761,173. This application Aug. 14, 1972, Ser. No. 279,205

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 DD **5 Claims**



1. In an apparatus for preparing visible images on a receptor sheet conforming to and simultaneous with an optical image projected onto an ion-permeable member having a photosensitive coating thereon which includes:

on ion source;

a photosensitive coated ion-permeable member;

an image receptor sheet;

optical image projection means;

an open mesh web adapted to transport neutral electrostatic toner particles, said web being positioned between said image receptor sheet and said ion-permeable member; and

means for supplying electrical potential between said ion source and said ion-permeable member, and means for supplying electrical potential between said ion-permeable member and said image receptor sheet during exposure said electrical potentials serving respectively (1) to direct ions which traverse the ion-permeable member onto the toner laden web and (2) to direct toner particles onto said image receptor sheet.

3,843,251

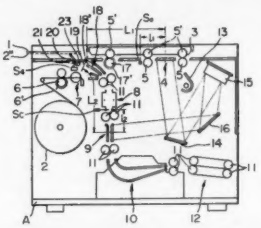
COPYING MACHINE EQUIPPED WITH SYNCHRONOUSLY EXPOSING MECHANISM

Takaji Washio, Toyonaka; Kazumi Iida, Neyagawa; Yasusuke Tohi, Ikeda, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed July 16, 1973, Ser. No. 379,489

Int. Cl. G03g *15/00*

U.S. Cl. 355—13 **19 Claims**



1. A copying machine comprising a passageway for transferring an original, an original exposing section for exposing the original located alongside the transferring passageway, a mechanism for transferring the original at a predetermined speed through said original exposing section, an original detecting member provided upstream of the original exposing section, and a transferring roller for synchronization provided further upwardly of said original detecting member; and a passageway for transferring a sheet of sensitive paper, a sensitive paper exposing section for exposing the sensitive paper located alongside the transferring passageway, a mechanism for transferring the sensitive paper through the transferring passageway at the same speed as that of transferring the original, a sensitive paper detecting member provided upstream of said sensitive paper exposing section, and a device for automatically supplying and cutting a web of sensitive paper supplied from a roll of the sensitive paper located at the upstream end of said sensitive paper transferring passageway; the distance between the center of said original exposing section and said original detecting member being equal to that between the center of said sensitive paper exposing section and said sensitive paper detecting member, said automatic supplying and cutting mechanism beginning to supply the sensitive paper when the leading edge of the original has reached said original detecting member, and thereafter cutting a web of the sensitive paper to a predetermined length, and said synchronizing transferring roller stopping its rotation when the leading edge of the original has reached said original detecting member and resuming rotation when the leading edge of the sensitive paper has reached said sensitive paper detecting member.

3,843,252

ELECTROPHOTOGRAPHIC COPIER OF IMAGE TRANSFER TYPE

Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 20, 1973, Ser. No. 333,852

Claims priority, application Japan, Mar. 1, 1972, 47-25342

Int. Cl. G03g *15/22*

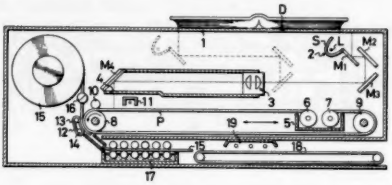
U.S. Cl. 355—16 **5 Claims**

1. An electrophotographic copier of the transfer type comprising:

a cassette containing a storage source of a photosensitive member defining web and winding means for winding photosensitive member withdrawn from said source,

a drive roller,

a tension roller longitudinally spaced from said drive roller, said photosensitive member extending from said source over said drive roller and said tension roller to said winding means to define with said cassette an endless loop,



means for rotating said drive roller in opposite forward and reverse directions for reciprocating said cassette along a longitudinal path between said drive roller and said tension roller at a speed equal to the peripheral speed of of said drive roller,

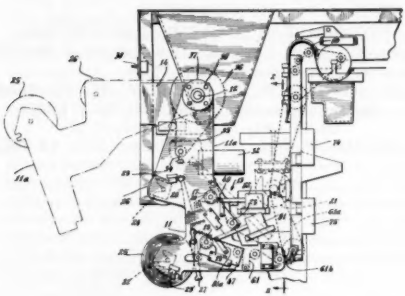
and means for forming an image on said photosensitive member and for transferring said image during the movement of said cassette along said path.

3,843,253

AUTOMATIC PAPER FEED AND CUTTING MECHANISM FOR PHOTOCOPIER MACHINE

Donald G. Mikan, Ridgefield, and Robert J. Williamson, Jr., Hamden, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 9, 1973, Ser. No. 339,732
Int. Cl. G03g *15/00*
U.S. Cl. 355—29 **1 Claim**



1. A multi-roll paper supply system for an electrostatic photocopier comprising in combination:

A. a first paper feeding and cutting means including:

1. means rotatably mounting a first paper supply roll;
2. a first pair of rotatably driven pressure rolls on axes parallel to said first paper supply roll and in proximity thereto;
3. a first normally de-energized electromagnetic clutch drive mounted on at least one pressure roll of said first pair;
4. a first electromagnetic brake on said clutch driven roll;
5. a normally de-energized solenoid operated first knife blade adjacent said driven rolls;

B. a second paper feeding and cutting means including

1. means rotatably mounting a second paper supply roll;
2. a second pair of rotatably driven pressure rolls on axes parallel to said second paper supply roll and in proximity thereto;
3. a second normally de-energized electromagnetic clutch drive mounted on at least one pressure roll of said second pair;
4. a second electromagnetic brake on said clutch drive roll;
5. a normally de-energized solenoid operated second knife blade adjacent said driven rolls;

C. motor means for continuously driving said first and second clutches;

D. means normally energizing said first and second brakes into holding condition whereby said first and second rolls are prevented from rotation;

E. first control means operable upon command to selectively de-energize said first brake and simultaneously therewith to energize the corresponding first clutch mounted on the same one of said first driven rolls, whereby paper from the first paper supply roll is fed by said first pair of driven rolls into a focal plane position of said photocopier;

F. first and second switches located in said focal plane position operable by said paper passing thereover; said first and second switches being located equal predetermined distances from said first and second knife blades respectively;

G. second control means operable by said first switch to de-energize said first clutch, energize said previously de-energized first brake and energize said adjacent solenoid operated first knife blade all substantially simultaneously, whereby paper fed by said driven rolls is cut to a preselected length as determined by the paper path length between said first switch and said first knife blade;

H. third switch means in said focal plane operable by paper passing thereover to initiate an electronic flash for image exposure;

I. paper supply sensors on each of said first and second supply rolls; and

J. further control means responsive to said first sensor means sensing a substantially empty first supply roll to permit said second control means to be operable by said second switch to de-energize said second clutch, energize said previously de-energized second brake and selectively energize said adjacent solenoid operated second knife blade all substantially simultaneously, whereby paper is now fed to said focal plane position by said second driven roll and is cut to a preselected length as determined by the paper path length between said second switch means and said second knife blade.

3,843,254

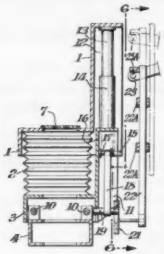
ENLARGING APPARATUS WITH LENSES OF VARYING FOCAL LENGTH AND AUTOMATIC FOCUS THEREFOR

Wilmuth Pramstraller, and Hansjorg Stampfer, both of Brixen, Italy, assignors to Durst AG, Bozen, Italy

Filed Oct. 17, 1973, Ser. No. 407,163
Claims priority, application Italy, Oct. 20, 1972, 30704/72
Int. Cl. G03b *27/40*
U.S. Cl. 355—56 **14 Claims**

1. A lens positioning device for a photographic enlarger having an automatic focusing mechanism and lenses of varying focal length mounted on a lens carrier which is movably connected to a projection head comprising a lens carriage, a movable coupling connecting the lens carriage to the lens carrier for movement at right angles to the optical axis whereby one of the lenses at a time can be selectively positioned in line with the optical axis, a guide plate having a slot, a pin linkage connecting the lens carriage to the slot of the guide plate for adjusting the position of the lens carrier in directions parallel to the optical axis in response to movement of the lens carriage at right angles to the optical axis whereby

the focal distance of the lens carrier is adjusted in accordance with the position of the pin in the slot, and a positioning linkage connecting the automatic focusing mechanism to the



guide plate whereby the guide plate is oriented at an angle which positions the lens carrier and selected lens at its proper focal distance.

3,843,255

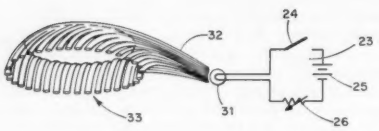
FILM SPEED ENHANCEMENT CAMERA

Melrose R. Cole, Prides Crossing, Mass., assignor to C & C Research, Inc., Danvers, Mass.

Division of Ser. No. 272,684, July 17, 1972, Pat. No. 3,823,413. This application Oct. 23, 1973, Ser. No. 408,856

Int. Cl. G03b *19/00*

U.S. Cl. 355—68 **10 Claims**



1. An improved camera comprising:

a light restrictive housing;

means for retaining photographic film within said housing adjacent one side thereof for recording an original image of a subject resulting from exposure of said photographic film to image light from said subject;

optical means mounted in another side of said housing for focusing an image of a subject on the plane of said film;

an independently energized, non-image source for providing light to the phtotsensitive surface of said film, said non-image source comprising;

a light emitting element; and

a light pipe within said housing for transmitting light from said light emitting element to a location in front of said film in a dispersed pattern to evenly expose said film to said non-image light; and

means within said housing for subjecting said film to non-image light from said source substantially simultaneously with the exposure of said film to image light from the subject being photographed thereby enhancing the speed of said film while preserving its inherent image quality.

3,843,256

PRESS FOR EXPOSURE AND PHOTOENGRAVING

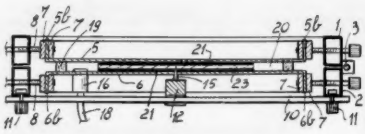
Anna Fontana, Trezzo D'Adda, Italy, assignor to Michele Catellono, Milan, Italy

Filed Feb. 26, 1973, Ser. No. 336,098

Claims priority, application Italy, Mar. 3, 1972, 21403/72

Int. Cl. G03b *27/04, 27/20*

U.S. Cl. 355—89 **3 Claims**



1. A press for exposure and photoengraving, in particular for the plates of circuits printed on a single or double face, comprising a first polygonal frame, a first working panel of transparent material placed over said first frame and removably fixed thereon, a second polygonal frame hinged along one side to said first frame, a second working panel of transparent material placed over said second frame and removably fixed thereon, means for forming a vacuum between said first and second panels when they are brought together, said first and second working panels having respective master negatives removably fixed thereon, wherein according to the improvement, said second frame has adjustable centering devices supported thereon for centering said plate to be exposed and photoengraved in a selected fixed position, and wherein the press further comprises independent registration devices for each of said first and second working panels to provide independent registration movements of said first and second polygonal frames with said first and second working panels fixed thereon and with said respective master negatives, following the registration movements of said first and second frames while said plate to be exposed and photoengraved is maintained fixed on said adjustable centering devices.

3,843,257

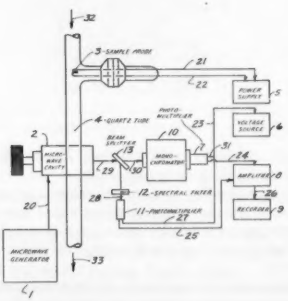
MICROWAVE-EXCITED EMISSION DETECTOR

George W. Wooten, Centerville, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Continuation of Ser. No. 203,351, Nov. 30, 1971, abandoned. This application June 18, 1973, Ser. No. 371,337

Int. Cl. G01j *3/30*; **G01n** *1/00, 21/16*

U.S. Cl. 356—85 **14 Claims**



1. A method for exciting a gaseous sample comprising mixing said sample with a discharge gas, subjecting said mixture to a pressure of about 1 Torr or less, and irradiating said

mixture under vacuum with sufficient microwave energy at frequencies of at least about 1 GHz to cause discharge gas to discharge and excite atoms in said sample to emit light of frequencies characteristic of the atoms.

3,843,258

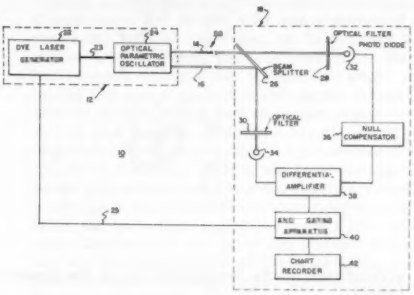
DUAL BEAM ABSORPTION TYPE OPTICAL SPECTROMETER

David M. Shupe, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 174,746, Aug. 25, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 410,145

Int. Cl. G01n *21/24, 21/26*

U.S. Cl. 356—88 **5 Claims**



1. A dual beam spectrometer for measuring the concentration of various materials along a path of substantial length comprising:

means for generating two coherent wave energy signals, the first signal of said two signals being polarized in a first direction and having a first variable wavelength and the second signal of said two signals being polarized in a second direction different from said first direction and having a second variable wavelength slightly different from and synchronously variable with said first variable wavelength wherein said slight difference in wavelengths is a difference which is sufficiently large so that only said first signal is readily absorbed by one of said various materials and sufficiently small so that all other factors affecting said first signal affect said second signal equally; and

means for simultaneously receiving and measuring the difference between the relative intensities of said two signals, wherein said two signals are separated one from the other in accordance with their direction of polarization whereby the intensity of each of said two signals may be measured separately and wherein said difference in intensities being directly proportional to the concentration of said one material.

3,843,259

DIFFERENTIAL SPECTROPHOTOMETER

Shigeo Tohyama, and Yoshio Sugiura, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

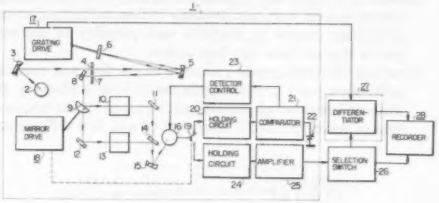
Filed Dec. 7, 1973, Ser. No. 422,800

Claims priority, application Japan, Dec. 11, 1972, 47-123334

Int. Cl. G01j *3/42*

U.S. Cl. 356—97 **10 Claims**

1. A spectrophotometer comprising light wavelength scanning means including a dispersing element for dispersing light emitted from a light source and drive means for causing rotation of said dispersing element, means for directing the light coming from said light wavelength scanning means toward a sample solution, means for detecting light passed through said sample solution thereby obtaining a corresponding detected output signal, means for delivering said detected output signal in synchronism with the output of a pulse generator, means for



distributing alternately said delivered output signal in synchronism with the output of said pulse generator, a pair of memory means for storing alternately said distributed output signal, and means for subtracting the memory content of one of said memory means from that of the other said memory means.

3,843,260

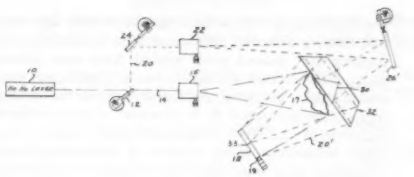
REAL TIME HOLOGRAPHIC SYSTEM

Walter R. Edmonds, 226 Woodlawn Dr., Fairborn, Ohio 45324

Filed Nov. 5, 1973, Ser. No. 412,858

Int. Cl. G03b *27/12*

U.S. Cl. 356—109 **1 Claim**



1. A real time holographic system for use in non-destructive testing of an object comprising: a source of monochromatic coherent light; means for splitting said light into an object beam and a reference beam; means for illuminating the object with said object beam; a holograph plate positioned in light receiving relation to light reflected from said object; means for directing said reference beam toward said holographic plate in a substantially conical path surrounding the object with said light passing in close proximity to the object; said means for directing the light along a conical path toward the holographic plate including a first conical member having an outside reflecting surface; said conical member being positioned on the side of said object remote from said holographic plate; means for directing the reference beam light from said beam splitting means toward said conical member to thereby provide a radially directed beam; an annular truncated conical member surrounding said first conical member adapted to direct said radially directed beam tOward said holographic plate along said conical path.

3,843,261

METHOD AND APPARATUS FOR ANALYZING THE SPATIAL RELATIONSHIP OF MEMBERS

Timothy R. Pryor, 5423 York Ln., Bethesda, Md. 20014

Filed Feb. 2, 1973, Ser. No. 329,121

Int. Cl. G01b *9/02*

U.S. Cl. 356—111 **24 Claims**

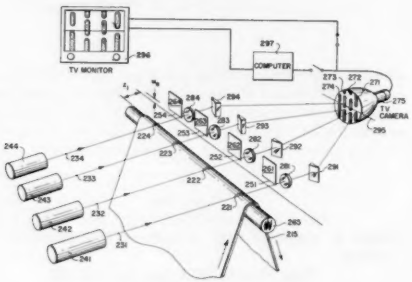
1. A method of analyzing the spatial separation relationship of a plurality of first points relative to a plurality of second

points spaced therefrom, each of said second points being spaced from a corresponding one of said first points comprising:

providing a plurality of first, discrete, diffraction wave producing means to establish said plurality of first points;

providing at least one second diffraction wave producing means spaced from said plurality of first diffraction wave producing means to establish said plurality of second points spaced from said first points;

directing electromagnetic radiation at the first and second diffraction wave producing means to form a plurality of discrete interference patterns each caused by the interaction of waves produced from one of said first diffraction



wave producing means forming one of said first points and from said second diffraction wave producing means forming said second point spaced from said one first point, said second diffraction wave producing means comprising a single boundary or two or more single boundaries separated in a direction transverse to the direction of said electromagnetic radiation, each of said single boundaries being capable of producing a single diffraction wave upon incidence thereon of said electromagnetic radiation; and

directing at least a portion of each of the plurality of discrete interference patterns formed to a central location for analysis.

3,843,262

METHOD OF DIAGNOSING HEAD LAMPS OF TRANSPORT VEHICLES AND A DEVICE FOR CARRYING SAME INTO EFFECT

Leonid Lazarevich Lazarev, ulitsa Pobedy, 19, kv. 30, Moskovskaya oblast; Leonid Grigorievich Novakovsky, Chernitsynsky proezd, 8, kv. 119, and Boris Aronovich Roitman, Federativny prospekt, 6, korpus 6, kv. 51, both of Moscow, all of U.S.S.R.

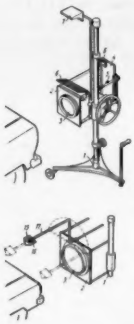
Continuation of Ser. No. 340,745, March 13, 1973, abandoned. This application Jan. 2, 1974, Ser. No. 431,406
Int. Cl. G01b *11/27*
U.S. Cl. 356—121 **3 Claims**

1. A method of diagnosing the head lamps of transport vehicles, the method comprising the steps of:

positioning a photometric head in front of the transport vehicle against the head lamps thereof;

orienting the optical axis of the photometric head to be aligned with the axis of the head lamps and to be set in parallel with the longitudinal axis of the transport vehicles;

providing at least two reflecting faces for orienting the optical axis of the photometric head, one of the two reflecting faces being formed with a rectangular graticule, the rectangular graticule being oriented on the photometric head so that the longitudinal cluster of lines of the rectangular graticule is disposed parallel to the vertical plane passing through the optical axis of the photometric head, the other cluster of lines of the rectangular graticule transversing the directions of the optical axis of the photometric head, the other one of two reflecting faces receiving the image of a selected portion of the transport vehicle and reflecting the image onto the other face formed with the rectangular graticule, the selected portion of the transport vehicle having an edge which is



perpendicular to the longitudinal axis of the transport vehicle;

turning the photometric head until the image of the selected portion of the transport vehicle reflected onto the face formed with the rectangular graticule becomes aligned with the transverse cluster of lines of the rectangular graticule so that the optical axis of the photometric head is set with the longitudinal axis of the transport vehicle;

switching on the head lamp; and

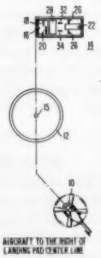
observing and checking the setting of the head lamp.

3,843,263

HELICOPTER OTPICAL POSITION INDICATOR

Edwin E. Snead, Yeadon, Pa., assignor to Burroughs, Detroit, Mich.

Filed Aug. 31, 1973, Ser. No. 393,650
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **11 Claims**



1. An optical device for assisting the landing of helicopters and other vertical descent aircraft by providing visual information to permit the pilot to pursue a flight path along a prescribed center line relative to the landing pad, to locate the aircraft at a precise hover point along said center line and

directly above the desired touchdown point, and to continuously indicate the altitude of the aircraft above the landing pad during descent comprising:

a center line module having at least first and second light sources and a first lens system positioned with respect to said light sources to form respective images thereof, light baffle means situated within said center line module for separating the images of said light sources as seen by said pilot, said first light source being positioned a first distance from said first lens system wherein the image formed thereof as viewed by said pilot appears to remain stationary and serves as a vertical datum bar, said second light source being positioned at a second distance from said first lens system whereby the image formed thereof serves as a vertical center line bar, said vertical center line bar when viewed by said pilot appearing to move horizontally with respect to said vertical datum bar in response to movement in a horizontal plane on either side of said center line by said pilot, the alignment of said center line bar with said datum bar by said pilot being indicative of flight along said prescribed center line,

a hover module having at least a single light source and a second lens system positioned with respect thereto such that the image formed by said second lens system as seen by said pilot serves as a vertical hover bar, hover point alignment datum arms positioned in predetermined relationship to said hover module, said hover bar appearing to said pilot to move in a horizontal direction in response to changes in the distance of said aircraft from said hover point, the concurrent alignments by said pilot of said center line bar with said datum bar and said hover bar with said hover point alignment datum arms being indicative of the aircraft having reached said hover point.

a descent module having at least a single light source and a third lens system positioned with respect thereto such that the image formed by said third lens system as seen by said pilot serves as a horizontal descent bar, a hover position datum arm and a touchdown datum arm positioned at substantially opposite extremities of said descent module, alignment by said pilot of said horizontal descent bar with said hover position datum arm indicating a predetermined hover point altitude prior to descent, said descent bar appearing to move in a vertical direction toward said touchdown datum arm during descent, the alignment of said descent bar with said touchdown datum arm, together with said concurrent alignments of said center line and hover bars with their respective datum markers indicating the presence of said aircraft at said touchdown point.

3,843,264

PROCESS AND APPARATUS FOR DETERMINING THE PRESENCE, IN A GIVEN AREA OF THE EDGE OF A SHEET OR OF A RIBBON OF TRANSPARENT MATERIAL

Jean Josse, Fosses-la-Ville; Joseph Declaye, Moustier sur Sambre; Roger Albert, Chatelet, and Marcel Bodart, Namur, all of Belgium, assignors to Glaverbel-Mecaniver Chaussee de La Hulpe, Boitsfort, Belgium

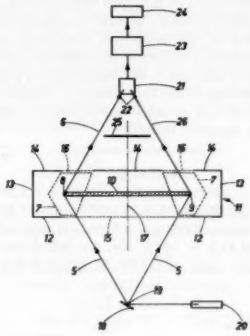
Filed Sept. 17, 1973, Ser. No. 397,931

Claims priority, application Luxembourg, Oct. 3, 1972, 66220

Int. Cl. G01b *11/04, 11/10*; **G01n** *21/30*

U.S. Cl. 356—199 **20 Claims**

1. A method of detecting whether a given zone is occupied by an edge portion of a transparent sheet or ribbon having a predetermined spatial orientation, said edge portion having a geometry fulfilling certain conditions, said method comprising the steps of projecting a beam of light rays into said zone in a direction such that, when a sheet or ribbon having said predetermined orientation and an edge portion of a said geometry is present with its edge portion in said zone, the light rays enter the edge portion after travelling in a direction across and at an acute angle to one side of the sheet or ribbon and light rays emerge from said edge portion to travel in a direction across and at an acute angle to the other side of said



sheet or ribbon after deflection by said edge portion, and detecting the existence of rays which thus emerge after deflection by said edge portion.

3,843,265

PHOTOMETER FOR DIGITAL INDICATION OF CONCENTRATION

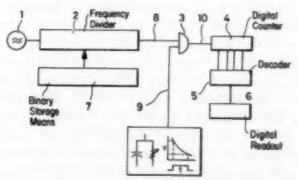
Bruno Egli, Rorschach, and Niklaus Manser, Goldach, both of Switzerland, assignors to Labtronic, AG, Zurich, Switzerland

Filed Apr. 24, 1973, Ser. No. 353,966

Claims priority, application Germany, Apr. 25, 1972, 2220204

Int. Cl. G01n *21/09*

U.S. Cl. 356—201 **4 Claims**



1. A photometer for the digital display of the concentration Conc. St of a test sample with respect to a standard solution in accordance with the formula Conc. $St = E_A \times F \times 1/E_{St}$ where E_A is the extinction of the test sample, F is a concentration determining factor and E_{St} is the extinction of a standard solution comprising:

a signal generating means providing a time period proportional to $E_A \times F$;

a base frequency oscillator;

an electrically adjustable frequency divider coupled to said base oscillator for providing an adjustable frequency pulse signal;

a coincidence gating means, said adjustable frequency divider and said signal generating means being connected to inputs of said gating means for providing adjustable frequency pulses at the output thereof during the time period;

digital counting means coupled to the output of said gating means and operable by said adjustable frequency pulses for totalizing and recording the pulses received during the time period proportional to $E_A \times F$; and

an adjustable storage means for receiving and storing an electrical indication of E_{SI}, said means being coupled to said adjustable frequency divider for electrically altering the frequency of the adjustable frequency pulse signal and the provision of pulses to said digital counting means in accordance with the stored indication of E_{SI} to provide a digital counting means recording corresponding to $1/E_{SI}$ $E_A \times F$ and the test solution concentration Conc St. with respect to a standard solution.

3,843,266

OPACIMETERS

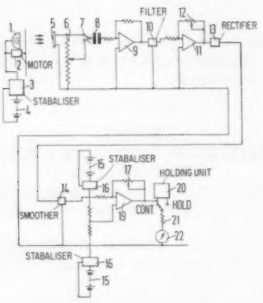
Arnold Littlewood, deceased, late of 43 Statfold Rd., Hitchin, England (by Esther Littlewood, personal representative)

Filed Feb. 6, 1973, Ser. No. 330,107

Claims priority, application Great Britain, Feb. 9, 1972, 6105/72

Int. Cl. G01n *21/12*

U.S. Cl. 356—207 **4 Claims**



1. An opacimeter comprising a source of light, means for chopping the beam of light; a photoelectric cell arranged to receive the chopped beam; means for causing the smoke, the opacity of which is to be measured to pass between the source of light and the photoelectric cell; means for removing from the output of the photoelectric cell any d.c. level which may be caused by ambient light to produce a resultant a.c. signal, a variable gain amplifier for amplifying the resultant a.c. signal to produce an amplified signal, means for smoothing and rectifying the amplified signal, a variable gain differential amplifier having an output and two inputs with one input connected to the smoothing and rectifying means and a reference voltage source connected to the other input, a potentiometer connected to said differential amplifier for setting the gain of said differential amplifier to provide any desired value of scale magnification, a hold device having an input connected to the output of said differential amplifier, a meter, and switch means for connecting the output of said differential amplifier either directly to said meter or to said meter via said hold device.

3,843,267

VARIABLE OPTICAL ATTENUATOR FOR A LIGHT SENSOR

Zoltan Vital, Brussels, and Jean Orban, Clabecq, both of Belgium, assignors to Ponder & Best, Inc., Los Angeles, Calif.

Filed Jan. 26, 1973, Ser. No. 327,087

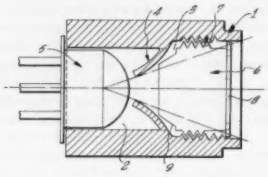
Claims priority, application Belgium, Jan. 27, 1972, 113276

Int. Cl. G01j *1/42*

U.S. Cl. 356—225 **11 Claims**

1. An optical device for providing optical attenuation of received radiation for an associated optical-to-electrical transducer comprising:

a body having first and second chambers, and a deformable member disposed between said first and second chambers, said first chamber being adapted to house an optical-to-electrical transducer, and said second chamber being adapted to receive radiation energy from the exterior of the optical device, and



an optically transparent member disposed in said second chamber, and being movable therein for selectively deforming said deformable member for varying the attenuation of the radiation passing from said second to said first chamber without substantially changing the axis of the field of view.

3,843,268

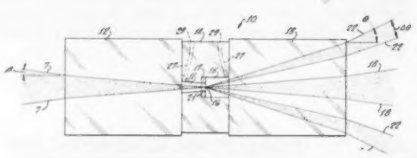
SAMPLE CONTAINER FOR LASER LIGHT SCATTERING PHOTOMETERS

Wilbur I. Kaye, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 5, 1973, Ser. No. 376,898

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **10 Claims**



1. In a laser photometer for measuring radiant power scattered from a sample at a selectable angle with respect to the direction of an incident beam of radiant power, an improved sample container comprising:

first and second thick, transparent windows;

a spacer between and in contact with said windows, said spacer having first and second coaxial intersecting passageways therein extending from the opposite ends thereof, the beam from said laser entering said first window and said first passageway in said spacer and said scattered radiant power exiting through said second passageway and said second window; and

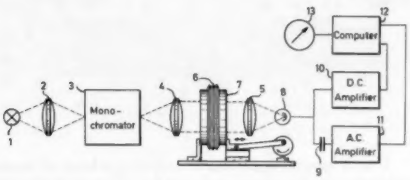
means positioned at said intersection of said passageways for absorbing light scattered toward said sample from said second window, said means having an aperture therein forming a cell for said sample which is coaxial with said first and second passageways, said laser beam being focused in said aperture.

3,843,269

PROCESS AND APPARATUS FOR PHOTOMETRIC DETERMINATION OF THE EXTINCTION OF A SAMPLE

Gerhard Hohberg, Hackenheim, Germany, assignor to Carl Zeiss Stiftung, (Heidenheim on the Brenz), Wurttemberg, Germany

Filed Nov. 19, 1973, Ser. No. 417,412
Claims priority, application Germany, Nov. 27, 1972, 2258094
Int. Cl. G01n *21/24, 1/10*
U.S. Cl. 356—205 10 Claims



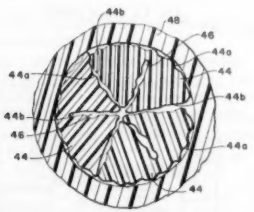
1. Process for the photometric determination of the extinction of a sample with a photoelectric measuring instrument in which the measurement radiation strikes the photoelectric receiver only over a path through a measurement cell, characterized by the fact that the length of path of the radiation passing through the sample is changed by a small amount periodically with the frequency ω, that an a.c. portion of the frequency ω of the resultant measurement signal and a d.c. portion thereof are separated, and that the quotient of the separated signal portions is formed and indicated.

3,843,270

NIB AND WRITING INSTRUMENT CONSTRUCTION WITH CAPILLARY ACTION

Yoshihito Kiriu, 13-4 Shinkoiwa 4-chome, Tokyo, and Hiroshi Inoh, 1-4-3, Yakata, Kofu, both of Japan

Continuation-in-part of Ser. No. 95,372, Dec. 4, 1970, Pat. No. 3,718,401. This application Feb. 20, 1973, Ser. No. 333,533The portion of the term of this patent subsequent to Feb. 29, 1990, has been disclaimed.
Int. Cl. A46b *11/00;* B43k *1/02*
U.S. Cl. 401—292 1 Claim



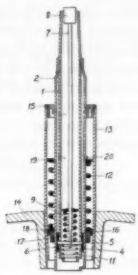
1. A writing instrument nib, comprising an elongated tubular casing, a plurality of elongated rigid writing members located within said casing, each of said members being generally fan-shaped and uniform in cross section longitudinally and having sidewalls terminating inwardly in an apex located in the vicinity of the center of said casing and outwardly in a curved wall generally complementary in configuration with respect to said casing and adjacent thereto, each of said members further including at least one longitudinally extending slit extending from said apex radially outwardly to a position just inwardly of said curved wall dividing said members into integrally connected portions, the surfaces of said curved wall, at least one of said sidewalls and the walls defining said slit of each of said members being provided with a plurality of longitudinal grooves, the depth of said grooves varying, said members being joined within said casing at their apexes while said sidewalls of said members are positioned adjacent each other, the space between said casing and said outer curved walls of said members, the space between adjacent sidewalls of said members and said slits of said members defining capillary passages extending longitudinally through said casing, said slits being in communication with the spaces between said adjacent sidewalls in the area adjacent said apexes, portions of said members extending outwardly of said casing at one end thereof being sharpened as a point.

3,843,271

VERTICALLY ADJUSTABLE COLUMN, PARTICULARLY FOR CHAIRS AND THE LIKE

Anders Bjerknes, Oslo, Norway, assignor to Staal & Stil A/S, Sandvika, Norway

Filed Mar. 9, 1973, Ser. No. 339,601
Claims priority, application Norway, Apr. 12, 1972, 1244/72
Int. Cl. F16b *7/10;* E04g *25/08*
U.S. Cl. 403—104 5 Claims



1. A telescopically adjustable column for chairs and the like, comprising inner and outer telescopic tubes defining an annular space therebetween, an internal locking device including an expandible clamping member slidably positioned in said annular space, and an actuating member connected to said inner tube and acting on said clamping member to expand the same in a locking position and cause the clamping member to strongly frictionally engage the outer tube, and a release device comprising an externally actuable release rod connected to said clamping member to move the same in a direction in which the actuating member releases the clamping member to reduce its frictional engagement with the outer tube, said clamping member having at least one wedge-shaped slot therein extending in the longitudinal direction of said tubes, said actuating member comprising at least one wedge located on said inner tube on the outer surface thereof and having key surfaces corresponding to said slot in the clamping member, and a pin connecting the release rod to said clamping member, said pin extending through axial slots provided in the wall of said inner tube.

3,843,272

BALL JOINT

Raoul Jorn, Post Wasserburg A.B., D-8992 Hengnau, Germany

Filed Jan. 3, 1973, Ser. No. 320,701
Claims priority, application Austria, Jan. 5, 1972, 56/72
Int. Cl. F16c *11/06*
U.S. Cl. 403—132 18 Claims

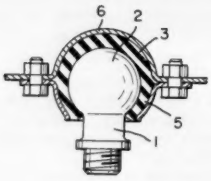
1. A ball joint comprising:

a. an inner ball member conforming to a body of revolution having a center lying on an axis;

b. an elastomeric layer conforming to at least a generally spheridal segment vulcanized to said ball member along a first surface of said layer;

c. a round metal shell having at least a periphery lying around said axis and vulcanized to only a portion of said layer on a second surface thereof opposite said first surface across said layer;

d. a housing enclosing said ball member and having an inner



surface geometrically similar to said body of revolution and centered thereon; and

e. means interconnecting said housing and said shell for compressing said layer along said axis between said inner surface and said shell to retain the portion of said second surface free from said shell in frictional contact with said housing under a force sufficient to prevent relative sliding movement of said second and inner surfaces while permitting molecular deformation of said layer upon relative angular displacement of said ball member and said housing.

3,843,273

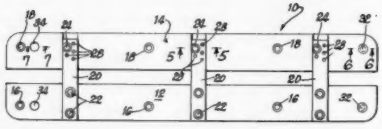
LOCATOR ASSEMBLY FOR MOUNTING MEMBERS FOR ROADWAY GAP BRIDGING AND SEALING DEVICES

Daniel E. Czernik, Hinsdale, and Clarence H. Neff, Skokie, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed Sept. 11, 1972, Ser. No. 287,595

Int. Cl. E01c *11/04*

U.S. Cl. 404—72 **10 Claims**



1. A method of locating the lateral and longitudinal positions for anchoring studs used to secure roadway gap sealing and bridging devices to adjacent roadway slabs over an elongate roadway gap, comprising the steps of providing an elongate locator assembly having a plurality of pairs of laterally spaced anchoring stud locators, each of said pairs being longitudinally spaced from each other pair, a[1]justing the lateral spacing of each of said pairs of anchoring stud locators in response to ambient temperature conditions, supporting said locator assembly on said slabs to straddle said gap with one of each of said pairs of locators overlying one of said slabs and the other of each of said pairs of locators overlying the other of said slabs, positioning an anchoring stud at a plurality of pairs of locations corresponding to each of a plurality of pairs of said anchoring stud locators, and securing said studs to said slabs at said locations.

3,843,274

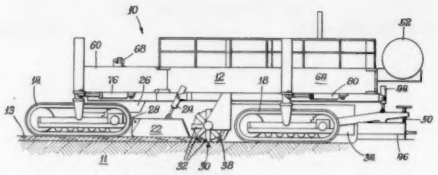
ASPHALT RECLAIMER

Nathan Gutman, Washington; Dorwin R. Larsen, Oswego, and Everette M. Volle, Morton, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 25, 1972, Ser. No. 292,089

Int. Cl. E01c *23/12*

U.S. Cl. 404—91 **10 Claims**



1. In a vehicle, apparatus for working a layer of workable asphalt or the like which make up the upper covering layer of a road, as the vehicle is driven forwardly over the road, said apparatus comprising: infra-red heating means associated with the forward end of the vehicle for heating the upper layer of asphalt to a soft and more workable condition; rotating cutting means associated with the vehicle and disposed transversely thereof rearwardly of the heating means for cutting the heated upper layer of asphalt, whereby the upper layer of asphalt is lifted; means associated with the vehicle rearwardly of the cutting means for pulverizing the lifted asphalt; a spreader screw associated with the vehicle and disposed transversely thereof rearwardly of the pulverizing means for distributing the pulverized asphalt across the road; and, leveling means associated with the vehicle rearwardly of the spreader screw for generally evenly leveling the distributed asphalt, werein the apparatus further comprises means for heating the pulverizing means to thereby heat said asphalt being pulverized.

3,843,275

VIBRATORY COMPACTING ROLLER

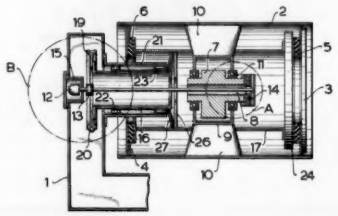
Paul Piatkowski, Kiel, and Manfred Birkholz, Schoenkirchen, both of Germany, assignors to Maschinenfabrik Buckau R. Wolf AG, Grevenbroich, Germany

Filed Oct. 16, 1973, Ser. No. 406,783

Claims priority, application Germany, Oct. 18, 1972, 2251242

Int. Cl. E01c *19/38*

U.S. Cl. 404—117 **9 Claims**



1. A vibratory compacting roller, comprising a frame; a shaft rotatably mounted on said frame and carrying an imbalanced mass; a hollow roller coaxially surrounding said shaft and mass with clearance, said roller having two opposite axial ends of which one is a free end; a tubular support mounted on said frame; a first sleeve turnably journalled in said support and projecting from the region of the other of said ends towards said one end; a second sleeve concentrically surround-

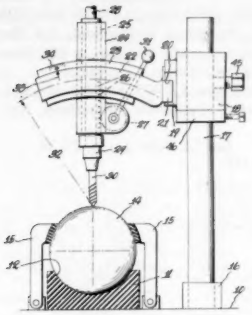
ing said first sleeve, connected with said roller for rotation therewith, and connected in motion-transmitting relationship with said first sleeve; first drive means connected with said first sleeve for rotating the same and for thereby rotating said roller; and second drive means connected with said shaft for rotating the same and thereby said imbalanced mass.

3,843,276

BOWLING BALL DRILLING MACHINES

Michael Williams, 785 Belvedere N.E., Warren, Ohio 44485

Filed Nov. 10, 1972, Ser. No. 305,378
Int. Cl. B23b *39/12, 41/00*
U.S. Cl. 408—236 **4 Claims**



1. A machine for drilling a hole in a bowling ball, comprising:

a base,

a support for said bowling ball, carried by said base and extending upwardly therefrom, said support including clamping means for releasably holding said bowling ball with the top portion of the latter exposed,

a post carried by said base and extending upwardly therefrom beyond the top portion of said bowling ball, said post being spaced to one side of said support,

a first sleeve slidably carried by said post and including means for holding it in any selected axial position therealong,

quill means for rotatably supporting a drill,

a bearing sleeve supporting said quill means for axial movement in a direction toward and away from said bowling ball,

a guide crosswise of and fixed to said first sleeve, said guide having a curved slide surface,

a slide having a curved surface complementary to the surface of said guide and slidably engaging the same, said slide supporting said bearing sleeve, whereby the longitudinal axis of said drill may be angularly displaced relative to said bowling ball by moving said slide relative to said guide.

3,843,277

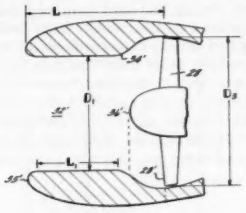
SOUND ATTENUATING INLET DUCT

Fredric Franklin Ehrich, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Feb. 14, 1973, Ser. No. 332,436
Int. Cl. E04f *15/20;* **F04h** *29/66;* **F01n** *1/02*
U.S. Cl. 415—119 **4 Claims**

1. In a gas turbine engine of the type having compressor means, combustion means, and turbine means in serial flow relation, there is provided a sound attenuating inlet duct comprising:

an outer casing extending forward of the compressor means and open at opposing ends to accommodate an inlet airflow to the compressor means wherein the inlet cross-sectional area enveloped by the casing initially converges to a minimum cross-sectional throat area intermediate the ends thereof and thereafter diverges outward to an increased diameter at the interface with the compressor means, said throat area remaining substantially constant



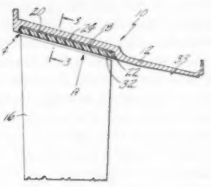
for an extended length through which the airflow is accelerated to a speed less than the speed of sound, thus remaining subchoked to provide sound attenuation equivalent to a totally choked inlet duct where the inlet airflow is accelerated to at least the speed of sound in a plane perpendicular to the inlet duct center axis.

3,843,278

ABRADABLE SEAL CONSTRUCTION

Spencer P. Torell, New Britain, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 4, 1973, Ser. No. 366,823
Int. Cl. F01d *5/20*
U.S. Cl. 415—174 **3 Claims**



1. A compressor case liner for use as an abradable tip seal for a stage of compressor blades in a gas turbine engine, said liner comprised of non-metallic, low density moldable abradable material and having a circumferentially extending radially inwardly facing surface defining a portion of a gas flow path through the engine, said liner including a plurality of closely spaced, radially extending slots circumferentially spaced about said surface, each slot defining an opening in said surface and forming thin wall portions between adjacent slots, said linear including a plurality of separately formed fabric sleeves embedded therein, a sleeve surrounding each one of said slots to strengthen said thin wall portions, said liner having an overall specific gravity of about 1.0 or less.

3,843,279

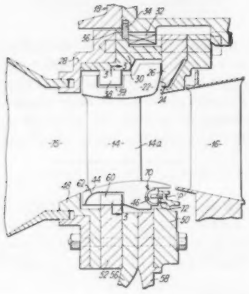
STATOR ASSEMBLY FOR GAS TURBINE ENGINES WHICH ACCOMMODATE CIRCUMFERENTIAL AND AXIAL EXPANSION OF ENGINE COMPONENTS

Ian Alexander Crossley, Hayes; Geoffrey Eric Kirk, Gotham; Norman Howell Anthony, Hemsby, and Derek Robert Bamber, Flint, all of England, assignors to Rolls-Royce (1971) Limited, London and The University of Technology, Leicestershire, England

Filed June 15, 1973, Ser. No. 370,444
Claims priority, application Great Britain, June 21, 1972, 28936/72
Int. Cl. F01d *9/00, 9/02*
U.S. Cl. 415—191 **5 Claims**

1. A stator assembly for gas turbine engines having a radially inner and a radially outer fixed structure comprising:

an aerofoil member for static operation in said gas turbine engine, and means for mounting said aerofoil member between the radially inner and radially outer fixed structure of said gas turbine engine, said aerofoil member being provided with a radially inner platform and a radially outer shroud and said mounting means including means mounted on said radially inner fixed structure for receiving said radially inner platform and means mounted on said radially outer fixed structure for receiving said radially outer shroud, the downstream end of said radially inner platform or said radially outer shroud being provided with a convex surface, and the downstream end of the other of said radially inner platform or said radially outer shroud being provided with a concave surface, said



convex and concave surfaces being adapted for cooperation with corresponding surfaces provided on said radially inner platform receiving means and said radially outer shroud receiving means, said platform and said shroud being loosely mounted in said platform and shroud receiving means so that when said gas turbine engine is in operation, said convex and concave surfaces are urged, as a result of the gas flow through said engine acting upon said aerofoil member, into engagement with said corresponding surfaces on said platform and shroud supporting means, said aerofoil member being permitted to tilt axially relative to said radially inner and outer fixed structure to accommodate relative axial movement between said inner and outer fixed structure.

3,843,280

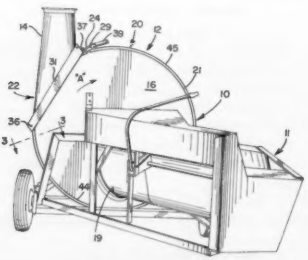
FORAGE BLOWER HOUSING

Donald A. Picha, Plainfield, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 27, 1973, Ser. No. 391,910

Int. Cl. F04d *29/48*

U.S. Cl. 415—219 C **3 Claims**



1. In a housing for a forage blower, said housing comprising a pair of laterally spaced generally circular side sheets, one of said side sheets having a crop inlet, and an annular peripheral wall adapted to be clamped against said side sheets, said peripheral wall comprising outlet means and a circumferential band connected in end to end relationship, said band having a first member at one end providing means for attaching said band to one end of said outlet means and a second member at the opposite end providing means for clampingly connecting said band to the other end of said outlet means, the improvement comprising both said first member and said second member providing both said attaching means and said clampingly connecting means to permit the end for end reversal of said band relative to said outlet means.

3,843,281

CASING OF A FLUID FLOW MACHINE

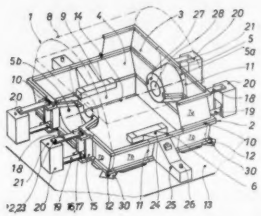
Pierre Meylan, Neuenhof, Switzerland, and Herbert Hausmann, Gleisdorf, Austria, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Nov. 8, 1973, Ser. No. 414,119

Claims priority, application Switzerland, Nov. 28, 1972, 17220/72

Int. Cl. F01d *25/26, 25/28*

U.S. Cl. 415—219 **6 Claims**



1. In a fluid flow machine of the double shell type and which is anchored to a foundation, the machine comprising an inner casing having mounted therein a guide blade carrier and a bladed rotor, and an outer casing surrounding and spaced from said inner casing, the improvement wherein said outer casing includes a frame therefor supported on the foundation by means of friction plates and being free to expand in any horizontal direction, and pairs of upper and lower strap means located around said frame for movement in horizontal planes, the upper and lower strap means of each said pair being pivotally connected at one end to upper and lower pivot points which are fixed in relation to the foundation and being pivotally connected at the opposite ends thereof to said frame thereby to guide said frame and outer casing in its horizontal movement.

3,843,282

HELICOPTER ROTOR PLENUM CHAMBER

Bruno A. Nagler, Scottsdale, Ariz., assignor to Nagler Aircraft Corporation, Phoenix, Ariz.

Division of Ser. No. 238,393, March 27, 1972, Pat. No. 3,830,588. This application Aug. 16, 1973, Ser. No. 388,817

Int. Cl. B64c *27/18*

U.S. Cl. 416—20 **7 Claims**

1. In a helicopter having a body, a hollow rotor shaft extending upwardly from the body for supporting a rotor hub system, a set of rotor blades secured to a central plate attached to said rotor hub system, a longitudinally oriented cavity disposed within each rotor blade and extending from said rotor hub system to a rearwardly directed orifice at the extremity of the rotor blade, an air pressure source disposed within the body for conveying a flow of air to the hollow rotor shaft and forcing the flow of air through said rotor hub system and the

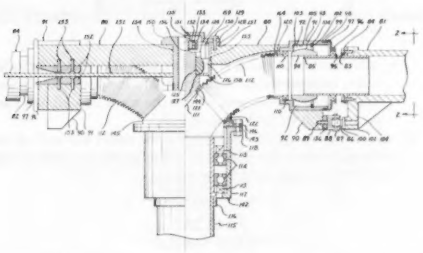
longitudinal cavity and orifice disposed within the rotor blades, said rotor hub system comprising:

A. a hollow open ended cone having a shaft extending upwardly therefrom at the apex thereof, said cone including at least two diametrically opposed ports disposed within the skirt of said cone;

B. a hollow member secured to the base of said cone for receiving internally the upper end of the rotor shaft;

C. bearing means disposed intermediate said hollow member and the rotor shaft for retaining said hollow member while affording rotation of said member with respect to the rotor shaft, said bearing means including air seal means for preventing a flow of air intermediate said hollow member and the rotor shaft;

D. pivot means secured to said shaft extending from said cone for interconnecting said cone and the central plate, said pivot means permitting both rotation and angular movement between said shaft and the rotor blades as a unit, whereby said hub system is configured as a floating hub;



E. a flexible bellows disposed intermediate each of said ports and the longitudinal cavity disposed within the corresponding one of the rotor blades to accommodate angular movement of each of the rotor blades with respect to the connected one of said ports;

F. ducting means secured to the central plate in proximity to each rotor blade, said ducting means interconnecting each one of said bellows and the connected rotor blade for channeling the flow of air from said bellows into the associated longitudinal cavity; and

G. further air seal means disposed intermediate the junction between each said bellows and the respective connected one of said ports and said ducting means; whereby, said rotor hub system directs a flow of air into each rotor blade and accommodates rotational and angular movement of the rotor blades without restricting the flow of air therethrough.

3,843,283

INNER SEAL FOR THE PISTON OF A ROTARY PISTON MACHINE

Gottlieb Wilmers, Neuenstadt, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm/Wurttemberg and Wankel GmbH, Lindau/Bodensee, both of, Germany

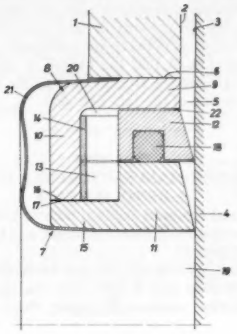
Filed Mar. 20, 1973, Ser. No. 343,151

Claims priority, application Germany, Mar. 24, 1972, 7211239

Int. Cl. F01c *19/12*

U.S. Cl. 418—142 **7 Claims**

1. An inner annular seal for the piston of a rotary piston machine of the trochoidal type, of which the housing comprises two end wall portions and a peripheral wall portion with a multi-lobed inner surface, in which the piston is arranged to rotate on an eccentric, the inner seal comprising at least two scraper rings, means for resiliently urging the rings against the adjacent end wall of the housing, a backing ring of L-shaped cross section and having a radial limb with an inner peripheral surface and an axial limb, the scraper rings being arranged between the axial limb and the radial limb of the backing ring



of L-shaped cross section, the inner scraper ring being located by the inner peripheral surface of the radial limb of the backing ring and the outer scraper ring being located on the inner scraper ring.

3,843,284

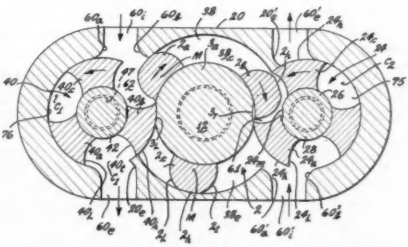
ROTARY CONVERTERS HAVING SPECIALIZED INTERLEAVING ELEMENTS

Raymond G. Spinnett, 2531 South St., Santa Ana, Calif. 92704

Filed Aug. 18, 1972, Ser. No. 281,645

Int. Cl. F01c *1/08*

U.S. Cl. 418—191 **11 Claims**



1. A mechanical system having a housing supporting at least first and second rotating elements in at least two adjacently annular internal chambers with each chamber having a stationary hub occupying part of the central portion of each of said chambers and wherein said first of said rotating elements includes:

a first pair of carrier discs having a first plurality of protrusions for rotation in one of said chambers, each protrusion having side faces which are convexly arcuate and which follow the arc of a circle having a center within the body of the protrusion;

a first shaft connected to said first pair of carrier discs;

a first gear mounted on said first shaft;

and wherein said second rotating element includes:

a second pair of carrier discs having a second plurality of protrusions for rotation in the other of said adjacent chambers, each of said protrusions having side faces concavely arcuate to form cavities between said protru-

sions, and said cavities following the arc of a circle whose center is outside the body of each of said second plurality of protrusions;

a second shaft connected to said second pair of carrier discs;

a second gear connected to said second shaft and mounted for continuous engagement with said first gear;

and wherein the protrusions of said first rotating element interleave the cavities between the protrusions of said second rotating element such that the center of the circles which encompass the convexly arcuate protrusions lies radially beyond the pitch line of the said first gear.

3,843,285

APPARATUS FOR MANUFACTURING A FOAM HAVING A DENSE SURFACE

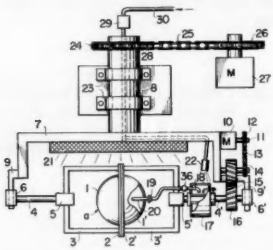
Harjo Nitta, and Naotoshi Sagawa, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Chiyoda-ku, Tokyo-to, Japan

Division of Ser. No. 100,615, Dec. 22, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,351

Claims priority, application Japan, Dec. 22, 1969, 44-102544

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 R **5 Claims**



1. Apparatus for manufacturing a foamed thermoplastic body having a relatively denser surface or skin comprising;

a support rotatably mounted; means to drive the support; a mold member having a mold cavity rotatably mounted on the support and adapted to receive foamable thermosplastic material; means to drive the mold member; means for producing steam fixed to and rotating with the mold member; means for heating the mold member and means for controlling the introduction of steam into the mold member while the mold member is rotating whereby the inside surface of the mold cavity is coated with some of the thermoplastic material before the steam is introduced to foam the remaining thermoplastic material.

3,843,286

BLOW MOLDING APPARATUS

Charles Horberg, Jr., Northbrook, and Richard K. Shelby, Hinsdale, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 12, 1971, Ser. No. 198,246

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B **2 Claims**

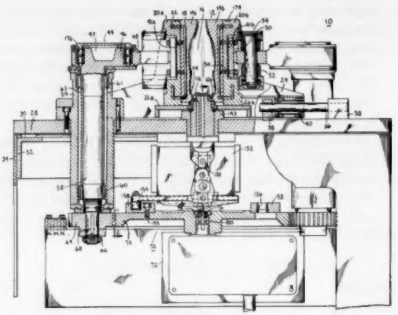
1. Movable base means for a split blow mold comprising:

A. an elongated plug member having a mold shell portion on its forward end;

B. temperature conditioning means for regulating the temperature of said shell portion;

C. means for slidably reciprocating said plug member in timed relation to movement of the remainder of said split blow mold, said means for slidably reciprocating said plug member including:

a. an oscillatable link member operatively connected to said plug member and to an arm radially movable with respect to the axis of the plug member;



b. cam means for radially moving said arm which includes a box cam mounted on a rotatable support and a roller follower for movement within the track of said box cam on rotation of said support; and

D. adjusting means for positioning the outer surface of the mold shell portion relative to the adjacent surfaces of the remainder of the split blow mold.

3,843,287

PRESS TOOLS

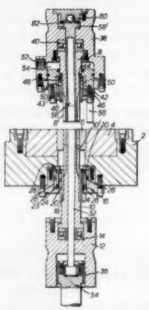
John G. Fowler, Hayes, England, assignor to Metal Compacting Tools, Ltd., Hayes, England

Filed June 28, 1973, Ser. No. 374,797

Claims priority, application Great Britain, June 29, 1972, 30371/72

Int. Cl. B30b *11/04, 3/00;* **B29d** *15/00*

U.S. Cl. 425—78 **13 Claims**



1. A press tool for compacting a mass of powder into a component having a helical formation, said tool comprising

a die member having a helical formation and arranged to receive a said mass of powder,

a punch member having a helical formation complementary to that of the die member and arranged to compact the powder within the die member upon relative axial movement between the punch member and the die member,

a helical bearing system mounting one of said members, said helical bearing system having a lead equivalent to that of the said helical formation whereby the said one member

is rotated during axial movement of the said one member relative to the other member so that the helical formation of the said one member is caused to follow the helical formation of the other member, and

a member mounting the said one member, and wherein the helical bearing system comprises

a plurality of helical tracks carried by the said one member,

a plurality of tracks carried by the mounting member, each track carried by the mounting member being associated with a respective track carried by the said one member, and

balls interposed between the associated tracks.

3,843,288

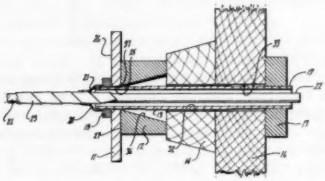
TENDON ANCHORAGE WITH THREADED SUPPORT ELEMENT

George H. Howlett, and James W. Howlett, both of Oakland, Calif., assignors to Conenco International Limited

Continuation-in-part of Ser. No. 816,583, April 16, 1969, Pat. No. 3,605,361. This application Mar. 1, 1971, Ser. No. 119,711The portion of the term of this patent subsequent to Sept. 20, 1988, has been disclaimed.

Int. Cl. B28b *23/04*

U.S. Cl. 425—111 **15 Claims**



1. An anchorage assembly for casting an anchorage means into a concrete member for receipt of a tendon for formation of a prestressed concrete member, comprising:

a. a concrete form having an opening therein to receive assembly mounting means therethrough;

b. assembly mounting means removably mounted in said opening in said form and extending from an exterior side thereof through said opening and interiorly of said form a distance sufficient to allow mounting of spacing means and anchorage means thereon;

c. spacing means mounted on said mounting means and positioned in abutting relation to said form, said spacing means being of a predetermined thickness to position an anchorage means in spaced relation to said form;

d. anchorage means having a wall defining an axially convergently tapered bore dimensioned at the smallest point thereof to receive said assembly mounting means and a tendon to be tensioned and formed to receive convergently actuating tendon gripping means, said anchorage means including bearing plate means formed with a bearing surface to allow transfer of axial tensioning forces to said concrete member, said anchorage means being releasably mounted on said mounting means with said mounting means extending through said tapered bore and said anchorage means being positioned thereon in abutting relation to said spacing means, said spacing means further preventing the ingress of concrete into said tapered bore in said anchorage means as mounted in abutting relation therewith and being removable from said concrete member to afford access to said tapered bore for insertion of tendon gripping means therein;

e. securement means releasably mounted on said mounting means on the exterior side of and bearing upon said form and releasably mounted adjacent the inner end of said mounting means, said securement means and mounting means urging said assembly of said anchorage means and spacing means against said form and securing said assembly in close abutting relation thereto during the casting of said concrete member.

3,843,289

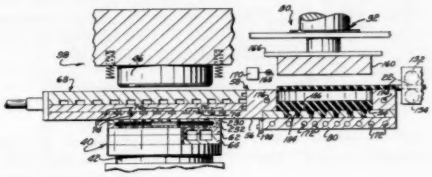
APPARATUS FOR TRANSFER MOLDING THERMOSETTING MATERIALS

Don A. Taylor, 216 Mill St., Wadsworth, Ohio 44281

Division of Ser. No. 167,240, June 29, 1971, Pat. No. 3,748,075. This application July 9, 1973, Ser. No. 377,514

Int. Cl. B29 *3/06*

U.S. Cl. 425—145 **13 Claims**



1. A cyclically operable apparatus for forming molded articles from thermosetting material, said apparatus comprising pot means for holding a charge of the thermosetting material, said pot means having at least one discharge opening through which the thermosetting material may pass from said pot means into a mold, loader means for loading at least a portion of a charge of the thermosetting material into said pot means during each cycle of a plurality of cycles of operation of said apparatus, said loader means being located at a loading station, means for forcing a portion of a charge of the thermosetting material to flow through said discharge opening and for enabling another portion of the charge to remain in said pot means during each cycle of a plurality of cycles of operation of said apparatus, said means for forcing a portion of a charge to flow through said discharge opening being located at an unloading station spaced from said loading station, means for moving said pot means between said loading and unloading stations on each cycle of operation of said apparatus, movable heater means for applying heat to the thermosetting material in the mold, said means for moving said pot means between said loading and unloading stations including means for moving said heater means from an inactive position in which said heater means is disposed to one side of said unloading station to an active position in which said heater means is located at said unloading station adjacent to the mold simultaneously with movement of said pot means from the unloading station to the loading station to enable said heater means to heat the thermosetting material in the mold while thermosetting material is loaded into said pot means at said loading station by said loader means, and control means for detecting when the portion of a charge of the thermosetting material remaining in said pot means at the end of one cycle of operation of said apparatus and the thermosetting material added to said pot means by said loader means during a next succeeding cycle of operation of said apparatus equals a charge of a predetermined magnitude and for interrupting operation of said loader means in response to the detecting of a charge of the predetermined magnitude in said pot means.

3,843,290

EXTRUSION DIE

Wilfried E. Sender, Johnstown, Pa., assignor to Sender Ornamental Iron Works, Johnstown, Pa.

Filed Dec. 18, 1972, Ser. No. 316,235

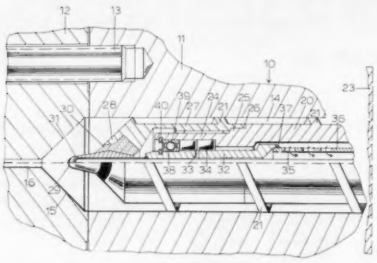
Int. Cl. B29b *1/04*

U.S. Cl. 425—208 **5 Claims**

1. An extrusion die comprising

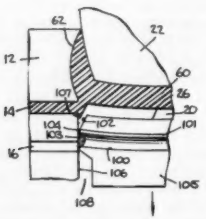
a die barrel having a generally cylindrical bore, said bore having a closed end,

an opening in said closed end to discharge plastic from said bore,
a hollow screw in said bore having a spiral flute adapted to rotate in close proximity with the wall defining said bore, a tube in said screw,
drive means driving said screw for rotation in said barrel,
and sensing means connected to the outer end of said tube, anti-friction bearings in said hollow screw supporting said



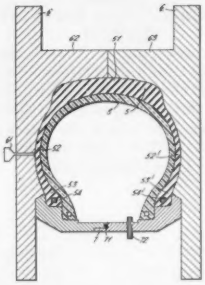
tube concentric thereto, whereby said screw can rotate around said tube,
and a temperature sensing wire extending through said tube and terminating adjacent said opening in said die, whereby the temperature of plastic adjacent said discharge opening can be sensed,
and heat insulation material between said sensing means and said frusto-conical end.

3,843,291
APPARATUS FOR MOLDING RUBBER
Edward H. Drab, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 863,652, Oct. 2, 1969, abandoned. This application Oct. 14, 1971, Ser. No. 189,200
Int. Cl. B29c *29/00;* **B29f** *1/00;* **B29h** *19/00*
U.S. Cl. 425—215 **4 Claims**



1. In an apparatus for injection molding during the manufacture of rubber-soled footwear, in combination:
mold side ring means surrounding and defining part of a predetermined cavity adapted to be closed at an upper portion by a lasted upper;
a sole plate surrounded by and slidingly engaging said side ring means;
means for collecting excess material and for severing the collected material from the molded article, said means including a lip on said sole plate extending toward and into close proximity of said side ring means and means on the peripheral wall of said sole plate adjacent said lip, but on that side of said lip which is facing away from said lasted upper, for forming into a peripherally extending bead that portion of the midsole rubber which escapes between said lip and said side ring means during the molding operation, and means coacting with said sole plate for retracting said sole plate away from said upper after said molding operation for severing from the molded article the bead of excess material.

3,843,292
A DEVICE FOR CASTING TIRES
Yoshiyuki Kitamoto; Makoto Tanaka, and Nobuya Yoshimura, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed June 7, 1972, Ser. No. 260,541
Claims priority, application Japan, June 18, 1971, 46-43347
Int. Cl. B29f *1/00;* **B29h** *5/18, 5/04;* **B29c** *5/00*
U.S. Cl. 425—242 **8 Claims**



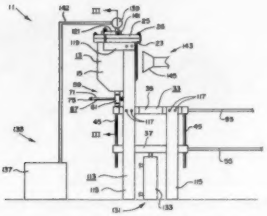
1. A mold assembly for casting pneumatic tires, comprising an outer hard mold member made of at least two separable parts and defining a toroidal cavity, said toroidal cavity having a surface which defines the outer peripheral surface of a pneumatic tire to be cast, said toroidal cavity having an annular opening facing the center of symmetry of the toroidal cavity; a flexible toroidal core having a pair of spaced annular beads, stiffeners extending from the two beads to that portion of the toroidal core where the width of the core is maximum and having a Shore hardness of not smaller than 60° and a core-reinforced gastight shell extending between the two beads so as to form the toroidal shape of said core, said core being inserted into said toroidal cavity of said outer mold member, said toroidal core consisting of at least one reinforcing cord ply extending between said annular beads and biased at an angle of 20° to 50° relative to the equatorial direction of the toroidal core, an outer peripheral rubber layer applied to the outer surface of the cord ply, and a lining layer applied to the inner surface of the cord ply, said lining layer being impermeable to gas; a ring mold made of two halves and engaging said annular opening of said toroidal cavity of said outer mold member so as to sealingly close said toroidal cavity in a gastight manner, said ring mold member engaging said two beads of said toroidal core in a gas-tight manner; a pouring gate means in said outer mold member forming a passage for the introduction of fluidized tire-forming material into said molding cavity; and a gas valve means secured to said ring mold member and communicating with the inside spaces of said toroidal core; the inside space of said toroidal core being selectively pressurized by feeding a gas into said space through said valve to cause the outer peripheral surface of the pressurized toroidal core to define the inner surface of a pneumatic tire to be cast.

3,843,293
MACHINE FOR MOLDING PLASTIC ARTICLE
Walter H. Harville, Finger, Tenn., assignor to H & L Distributing Company, Finger, Tenn.
Filed July 27, 1972, Ser. No. 275,815
Int. Cl. B29f *1/022*
U.S. Cl. 425—243 **14 Claims**

1. Apparatus for molding plastic articles from molten plastic, said apparatus comprising:
container means for the molten plastic;

mold means for forming the plastic articles, said mold means being located below said container means, said mold means including a first die and a second die, said second die being relatively moveable from an open position away from said first die to a closed position adjacent said first die;

means for moving said second die from the open to the closed position;



valve means for selectively allowing the molten plastic to be introduced to said mold means from said container means, said valve means being positioned intermediate said container means and said mold means;

means for providing compressed air directly communicated with the interior of said container means for forcing the molten plastic from said container means into said mold means; and

means for maintaining heat in said container means for keeping the molten plastic molten.

3,843,294

INJECTION SYSTEM FOR GANGED INJECTION MOLDS

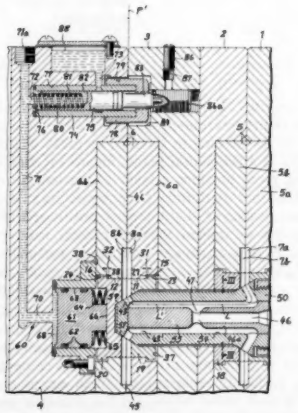
Friedrich Bernd Bielfeldt, Aidenried, and Artur Kamm, Eichstatt, both of Germany, assignors to Krauss-Maffei AG, Munich, Germany

Filed Sept. 15, 1972, Ser. No. 289,222

Claims priority, application Germany, Sept. 15, 1971, 2146212; Aug. 26, 1972, 2242017

Int. Cl. B29f *1/03*

U.S. Cl. 425—247 **17 Claims**



1. An injection arrangement for injection-molding machines and the like comprising a mold assembly including a plurality of relatively displaceable mold-carrying plates and respective mold member mounted on said plates, said mold members defining at least two molds having at least two spaced-apart parallel separation planes in closed positions of said molds, at least some of said plates being displaceable relatively in a direction perpendicular to said planes; a distributor nozzle having an axis extending perpendicular to said planes and communicating with said molds in the closed position thereof, said planes being spaced along the axis of the nozzle, said distributor nozzle being formed with a main feed passage along said axis for an injectable material adapted to charge said molds, said nozzle extending through at least some of said plates, and respective auxiliary feed passages branching from said main feed passage at least at two axially spaced locations each associated with one of said planes and leading to the respective molds, said auxiliary feed passages being of substantially equal length.

3,843,295

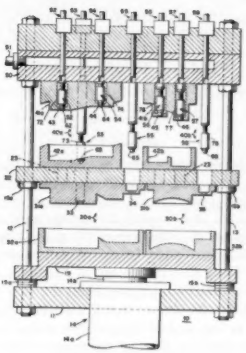
INJECTION MOLDING MACHINE WITH ADJUSTABLE NOZZLE LENGTH MEANS

Walter H. Greenberg, Syosett, and Frank J. Nussbaum, New York, both of N.Y., assignors to Bischoff Chemical Corporation, Hicksville, N.Y.

Filed May 24, 1973, Ser. No. 363,618

Int. Cl. B29g *3/00*

U.S. Cl. 425—248 **4 Claims**



1. In a machine for molding articles of polymeric organic material, said machine comprising a frame, linear clamping means comprising a fixed portion secured to the frame and moving components for reciprocating linear movement between a closed position and an open position, at least one split mold comprising a mold component having reciprocating linear movement in the same direction as the clamping means, and means for directing pressurized hot organic polymeric plastic material into a mold cavity for conversion into an article removable from the mold at the end of the molding cycle, the improvement which consists of the combination of: a plurality of stacked split molds whereby the closed clamping means applies pressure to a plurality of molds;

a manifold system adapted to distribute organic material, said manifold system being secured to a fixed portion of the frame;

nozzles extending from the manifold system toward mold components;

nozzle seats on selected movable components of the molds, said nozzle seats having orifices, and said nozzle seats being adapted to fit against the tips of the nozzles whereby hot organic plastic material flows through orifices in the nozzle seats for filling a mold cavity during a programmed portion while the molds are closed, said

nozzle seats being reciprocatingly retractable from the nozzle tips during the opening of the molds; and

adjustable means on each nozzle fitting against a reciprocatingly retractable seat, whereby the length of each such nozzle can be adjusted to assure an appropriate pressure between the nozzle tip and nozzle seat while a mold is closed, notwithstanding operation of the molding machine at different times at temperatures different enough that thermal expansion or contraction of the length of the nozzle throughout such temperature difference could account for troublesomely different pressures between the nozzle tip and nozzle seat in the absence of such nozzle length adjustment means.

3,843,296

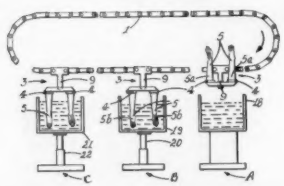
GLOVE PRODUCING APPARATUS

Henry Sidley, Johannesburg, South Africa, assignor to Vulco-Sidley Machine Company (Proprietary) Limited, Transvaal, South Africa

Division of Ser. No. 887,225, Dec. 22, 1969. This application Mar. 13, 1974, Ser. No. 450,845

Int. Cl. B29c *13/00*; B29h *3/042*

U.S. Cl. 425—270 **4 Claims**



1. Glove producing apparatus comprising at least one hand-shaped former movable along a path from a first station through a second station to a third station; control means operative to locate the former in upright position with the fingers of the former disposed upwardly at the first station and in inverted position with the fingers disposed downwardly at the second and third stations; means at the first station operative to apply concentrated coagulant to the cuff portion only of the former when the former is in upright position at the first station; means at the second station operative to apply dilute coagulant to the hand portion of the former when the former is in inverted position at the second station; and means at the third station operative to apply latex to the entire glove forming portion of the former when the former is in inverted position at the third station.

3,843,297

APPARATUS FOR PREPARING MEASURED LENGTHS OF DENTAL FLOSS

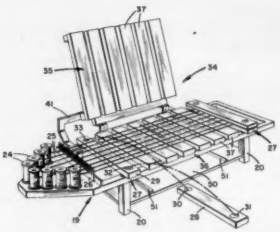
Rene Jose Espinosa, 21 S. Stone Ave., La Grange, Ill. 60525

Division of Ser. No. 127,537, March 24, 1971, Pat. No. 3,769,396. This application Aug. 6, 1973, Ser. No. 385,719

Int. Cl. B29c *17/14*

U.S. Cl. 425—289 **8 Claims**

1. An apparatus forming measured lengths of dental floss material with integral nubs at each end thereof comprising a feeding portion and a treating portion, said feeding portion comprising means to support thereon a plurality of bobbins containing lengths of dental floss, fixedly mounted comb-like means through which said dental floss is fed from the individual bobbins and separated, said treating portion comprising a first clamping means remote from said comb-like means for securing the free ends of said dental floss therebetween, a second clamping means mounted adjacent said comb-like means substantially parallel to said first clamping means, a grid member between said clamping means comprising a plurality of bars of heat insulating material arranged in mating opposing pairs spaced parallel one from the other, and heat



producing means beneath said grid member for heating and melting portions of exposed floss extending between said heat insulating bars thereby producing said nubs.

3,843,298

APPARATUS FOR MANUFACTURING FINISHED PRODUCTS FROM CONTINUOUSLY ADVANCING LAYERS

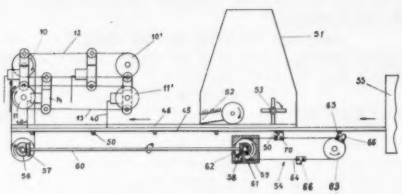
Manfred Rossig, Neu-Isenburg, Germany, assignor to Redland Tiles, Ltd., Reigate (Surrey), Great Britain

Continuation of Ser. No. 152,434, June 11, 1971, abandoned, which is a division of Ser. No. 826,993, May 22, 1969, abandoned. This application Sept. 20, 1973, Ser. No. 399,451

Claims priority, application Germany, May 22, 1968, 1759639; May 8, 1969, 1923437

Int. Cl. B28b *11/14*

U.S. Cl. 425—296 **11 Claims**

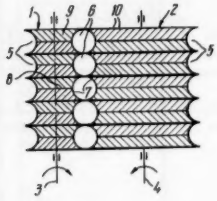


1. In an apparatus for molding flowable material and cutting it into strips of predetermined length, the combination comprising, means for feeding in seriatim an array of juxtaposed mold portions in a horizontal plane, means for depositing on said traveling mold portions a layer of hardenable material, means adjacent said depository for compacting said material, plural endless conveyor flight means positioned above the horizontal plane in spaced vertical planes, each conveyor flight means having an upper and lower vertically spaced conveyor flight including mounting means with the upper flight of one conveyor flight means and the lower flight of the other conveyor flight means being in a horizontal plane, carrier means extending between the conveyor flight means, said carrier means including mounting means at each of its ends which engage with the mounting means of a respective conveyor flight, vertically reciprocable blade means carried by said carrier means, drive means for the conveyor means for traversing said blade means longitudinally of the horizontally moving mold portions and drive means for synchronizing the application of said layer on the mold portions with the cutting operation to form separated, independent articles.

3,843,299
DEVICE FOR SHAPING SPHERICAL PELLETS

Viktor Nikolaevich Bochanov, ulitsa Zhelyabova, 13, kv. 48; Veniamin Alexandrovich Minchenko, Mikroraion 13, dom 15, kv. 75, and Svyatoslav Sergeevich Schipitsin, ulitsa Karla Marxa, 44a, kv. 19, all of Angarsk Irkutskoi Oblasti, U.S.S.R.

Filed Sept. 1, 1972, Ser. No. 285,858
Int. Cl. B29c *15/00*; B29b *1/02*
U.S. Cl. 425—332 **6 Claims**

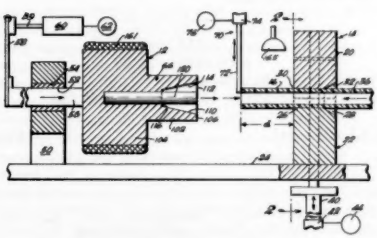


1. A device for shaping spherical pellets, comprising: at least one pair of rotatable rollers having parallel axes of rotation and being disposed adjacent each other by their lateral cylindrical surfaces; open circular cannelures, semicylindrical in cross section, provided on said lateral roller surfaces with depressions, and located thereon in opposite pairs to form a row of shaping grooves, circular in cross section; halves of said cannelures, that are arranged asymmetrically with respect to their common middle diametral planes, transversal to said rollers, having a higher coefficient of friction than other halves of said cannelures.

3,843,300
TIP FORMING MACHINE AND PROCESS

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Filed Sept. 26, 1973, Ser. No. 401,052
Int. Cl. B29h *3/00*
U.S. Cl. 425—384 **9 Claims**



1. A tip forming machine for tubular stock of predetermined wall thickness and of meltable formable material, said machine comprising,

a frame,

a positioning jaw for holding the end zone of a tube to be formed with a terminal tip on one end thereof, and including,

a fixed jaw member on the frame, said fixed jaw member having a first through recess,

a movable jaw member on the frame having a second through recess companionate to said first recess,

means to move the jaw members between a) a partially open position and b) a closed position, said recesses of said jaw members, when in said closed position, defining a through passageway sized for snug tight gripping engagement of the end zone of the tube with the terminal end of said tube extending from said passageway;

stop means to limit axial penetration of the end zone of the tube through said passageway when the jaws are in an open position and effective to measure a predetermined distal end length of the tube extending from said jaw which is characterized by a predetermined volume of said material,

a forming die movable between a first retracted position spaced from said jaw and a second advanced position closely adjacent to said jaw,

said die having a face confronting said jaw and a conical forming recess in said face, said recess having a mouth and being bounded by a side wall and end wall, said side wall of said recess converging depthwise from said mouth to said end wall and said end wall being of a diameter less than the outside diameter of said tube and said mouth being of a diameter greater than the outside diameter of said tube,

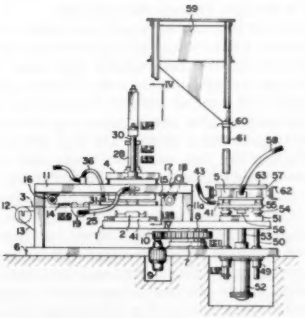
said forming die having a symmetrical center pin extending axially from said end wall the axial length of said recess to the plane of said mouth and of a lateral cross section sized to closely fit within the column of said distal end length when said forming die is moved to said advanced position,

means to heat said forming die to a temperature above the temperature of said meltable formable material sufficient to heat the predetermined volume of the distal end length and deform said end length into a conical tip with a through passageway integral on the end of said tube; and means to move said die between said advanced and retracted positions with said recess being coaxial with said passageway when in an advanced position.

3,843,301
VACUUM SEALED MOLDING APPARATUS

Itsuo Hijikata, Nagoya; Masayoshi Kasazaki, and Hideto Terada, both of Toyokawa, all of Japan, assignors to Sintokogio, Ltd., Nagoya, Aichi-ken, Japan

Filed Feb. 22, 1973, Ser. No. 334,708
Claims priority, application Japan, Feb. 23, 1972, 47-19154; Feb. 23, 1972, 47-19155
Int. Cl. B29c *17/04*
U.S. Cl. 425—388 **3 Claims**



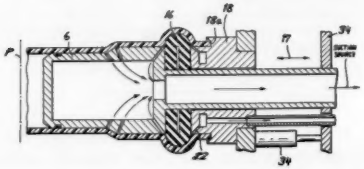
1. A vacuum sealed molding apparatus comprising a turntable adapted to rotate for transferring a pattern fixed on a pattern plate from a first station to a second station and then from said second station to said first station, said second station being apart from the first station and provided with means for supplying a charge of heat resisting particulate material into a flask which is conveyed to said second station; a frame member disposed at said first station which consists of

surrounding side walls forming a open end thereof and a vacuum chamber provided along the side walls having a slot to draw a covering sheet of synthetic resin to said slot by vacuum suction thereby holding the sheet on the surface of said open end in a substantially plane form above the pattern transferred to the first station; means for causing vertical movement of said frame member or the pattern relatively toward each other so as to apply said covering sheet on the surfaces of said pattern and the pattern plate and means disposed at the second station for causing vertical movement of said flask or said pattern relatively so as to set the flask on the pattern covered with the covering sheet and then remove said pattern from the flask after molding.

3,843,302
APPARATUS FOR MAKING THERMOPLASTIC PIPE COUPLING PARTS

Aristovoulos G. Petzetakis, Thessaloniki & Chandri Sts., Moschaton/Piraeus, Greece

Division of Ser. No. 255,221, May 19, 1972. This application July 16, 1973, Ser. No. 379,839
Claims priority, application Greece, July 19, 1971, 45895
Int. Cl. B29c *17/00*
U.S. Cl. 425—388 **1 Claim**



1. An apparatus for forming a sleeve portion in a plastically deformable thermoplastic pipe comprising:

a tubular mandrel closed at one end and formed with a small-diameter portion adjacent said end, a large-diameter portion adjacent said small-diameter portion, and a shoulder between said portions;

an abutment ring axially spaced from said large-diameter portion in a direction away from said end and forming an abutment for the thermoplastic pipe upon thrusting of said pipe over said mandrel from said end, said ring being formed with a cylindrical part receivable in said pipe;

an outwardly bulging compression ring received between said large-diameter portion and said abutment ring for deflecting the pipe outwardly upon axial compression between said mandrel and said abutment ring, said shoulder being provided with a plurality of passages opening at the surface thereof and communicating with the interior of said mandrel, said large-diameter portion being provided with a plurality of passages opening at the surface thereof immediately adjacent said compression ring;

a suction source communicating with the interior of said mandrel whereby suction at said passages draws said pipe huggingly against said shoulder and said large-diameter portion;

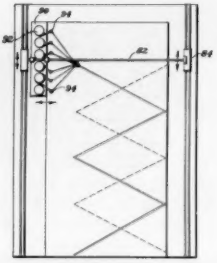
means for applying suction at said cylindrical part to draw said pipe thereagainst during outward bulging of said compression ring; and

means for relatively displacing said abutment ring and said mandrel axially to compress said compression ring and form an outward bulge in the pipe while the latter is held by suction against said part, said large-diameter portion and said shoulder.

3,843,303
APPARATUS FOR MAKING RESIN BONDED GLASS FIBER ARTICLES

Jonas Medney, 3504 Woodward St., Oceanside, N.Y. 11572

Division of Ser. No. 780,014, Nov. 29, 1968, abandoned. This application July 19, 1971, Ser. No. 163,993
Int. Cl. B28b *11/00*
U.S. Cl. 425—395 **5 Claims**



1. Apparatus for molding a resin bonded glass fiber article comprising:

a. a plurality of means for supplying glass fibers;

b. a plurality of feed-eyes each one of which is arranged to carry glass fibers from said means for supplying glass fibers;

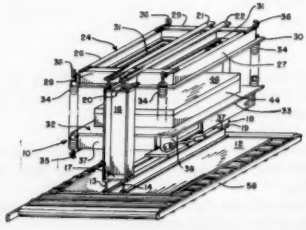
c. drive means adapted to move said feed-eyes along paths that are oblique to each other; and

d. mold means positioned adjacent to the paths of said feed-eyes for receiving the glass fibers carried thereby, said mold means being comprised of an upper and lower member each of which has a plurality of substantially U-shaped grooves transversely intersecting each other whereby said grooves are combined to form the mold cavity, said grooves in one of said mold members having a marginal lip, said grooves in said other mold member having a marginal recess for receiving said lip, said lip and said recess being slightly spaced from each other during the molding operation whereby the resulting flash has a minimum thickness.

3,843,304
MOLDING PRESS

Michael R. Sigal, 256 Friedensburg Rd., Mt. Penn, Pa. 19606

Filed July 5, 1973, Ser. No. 376,750
Int. Cl. B29c *3/00*
U.S. Cl. 425—411 **12 Claims**



1. A press comprising a fixed platen and a movable platen adapted to receive an object to be pressed therebetween and

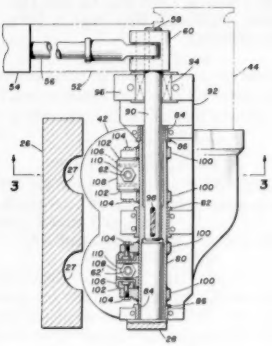
means for moving said movable platen toward said fixed platen for confining said object therebetween under pressure, said means for moving said movable platen toward said fixed platen including means providing for automatic adjustment of said movable platen to ensure substantially uniform pressure over the entire areas of said object brought into contact with said fixed platen, said last-named means including elevating means for said movable platen in contact therewith to permit rocking movement thereof and resilient means suspending said movable platen at points remote from said elevating means.

3,843,305

DOUBLE PARISON DIE HEAD CONTROL MECHANISM

Robert L. Doughty, West Hartford, and Clayton A. Wheeler, Plainville, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 223,269, Feb. 3, 1972, Pat. No. 3,767,345.
This application July 5, 1973, Ser. No. 376,533
Int. Cl. B29d *23/04*
U.S. Cl. 425—465 **5 Claims**



1. A double parison extrusion die head having a pair of spaced, vertically movable, die core members extending from the upper surface thereof and operable to vary the wall thickness of parison tubes extruded from said head, and torque equalizing mechanism for actuating said die cores, said actuating mechanism comprising

a composite shaft member having

a driven section mounted on the top of said head for rotational movement on a horizontal axis normal to the core axes and in laterally adjacent parallel relation to a vertical plane joining and including the axial center lines of said spaced core members, and

a driver section rigidly fixed at one end to a central attachment zone of the driven section in equally spaced relation to each of said die core center lines, said driver section at its other end extending axially outwardly of the driven section and being supported for rotational movement on the axis of the driven section, said other end having means engageable for imparting a rotational rocking movement to said driver section, said driven shaft section having rocker elements extending therefrom at equally spaced positions relative to said central attachment zone, the outer ends of said rocker elements being interconnected with the upper ends of said die core members and engaged therewith for uniformly raising and lowering the latter in response to rocking movement imparted to said driven section, said central attachment zone comprising the sole area of torque transfer between said driven section and said driver section.

3,843,306

OIL ABSORBENT FOAMED SILICATE FOR OIL POLLUTION CONTROL

J. Mark C. Whittington, Hedgesville, W. Va.; John E. Meyer, and Glenn D. Tingle, both of Hagerstown, Md., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 114,076, Feb. 9, 1971, Pat. No. 3,728,208.
This application Dec. 22, 1972, Ser. No. 317,621
Int. Cl. E02b *15/04*
U.S. Cl. 431—8 **9 Claims**

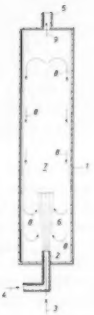
1. An improved process for controlling and removing oil present on the surface of water comprising depositing foamed silicate particles on the surface of the water having an oil slick thereon, said foamed silicate particles comprising a porous alkali metal silicate material having a bulk density in the range of from about 6 to about 12 pounds per cubic foot and having an oleophilic-hydrophobic agent distributed uniformly throughout as an integral part of said foamed silicate particles, whereby said foamed silicate particles have an enhanced affinity for oil throughout the entire particle composition, facilitating the controlling of the oil on the surface of said water through absorption by said foamed silicate particles.

3,843,307

PROCESS FOR INCOMPLETE COMBUSTION OF HYDROCARBONS

Gernot Staudinger, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 28, 1974, Ser. No. 437,583
Claims priority, application Great Britain, Feb. 14, 1973, 7235/73
Int. Cl. F23c *11/00*
U.S. Cl. 431—8 **8 Claims**

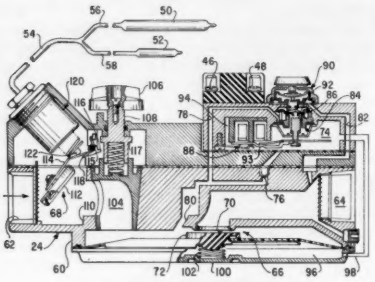


1. In a process for the incomplete combustion of a gaseous or liquid hydrocarbon fuel in a substantially void reactor wherein the fuel is mixed with or finely dispersed in an oxygen-containing gas and passed as a gaseous jet through at least one supply opening into the reactor, the initial part of the reaction zone in the reactor occuring at a point where the mixture of fuel and oxygen-containing gas introduced as a gaseous jet undergoes ignition, the improvement which comprises: passing the gaseous jet into a reactor in which the residence time of the gaseous product of incomplete combustion is at least 0.1 seconds at a sufficiently high velocity such that the initial part of the reaction zone is displaced from the supply opening by a distance which is at least ten times the diameter of the supply opening.

3,843,308
HEATING CONTROL SYSTEM

Marvin M. Graham, Seal Beach, and Michael J. Caparone, Los Angeles, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 9, 1973, Ser. No. 404,575
Int. Cl. F23n *5/24*
U.S. Cl. 131—22 **10 Claims**

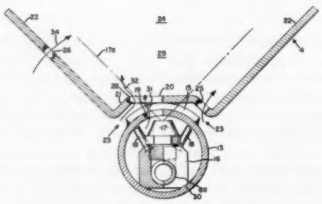


1. A heating control system comprising
a burner;
a control device having an inlet adapted to receive fuel from a source, an outlet for supplying fuel to said burner, a flow passage between said inlet and said outlet, and valve means disposed in said flow passage for controlling fuel flow therethrough;
thermostat means for operating said valve means to control the supply of fuel to said burner; and
safety operator means including actuator means for operating said valve means to interrupt the supply of fuel to said burner, first bulb means containing an expandable fluid positioned to sense an overheat condition of said heating system, second bulb means containing an expandable fluid positioned adjacent said burner to sense a flame roll-out condition and tube means connecting said first and second bulb means with said actuator means whereby said first and second bulb means cooperate to control said valve means to prevent the supply of fuel to said burner in response to said overheat condition or said flame roll-out condition.

3,843,309
LIQUID FUEL GRID BURNER FOR VITIATED AIR USING AUXILIARY COMBUSTION AIR

Sortiris Lambiris, Andover, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 7, 1973, Ser. No. 338,993
Int. Cl. F23q *9/00*; F23m *9/02*
U.S. Cl. 431—284 **5 Claims**

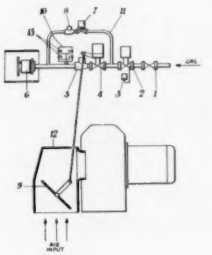


1. In a grid burner having a plurality of spaced burner elements and adapted for flow of vitiated air past said burner elements to be heated thereby, the combination of:
an auxiliary air pipe connected to a source of auxiliary combustion air at a pressure slightly above that of said vitiated air,
a fuel supply and nozzle assembly adapted to be withdrawn from said auxiliary air pipe and comprising a plurality of spaced fuel nozzles interconnected by fuel supply pipe sections, the fuel nozzles disposed entirely within the auxiliary air pipe,
at least one elongated wing member supported by and spaced from said auxiliary air pipe, said wing member being formed with inner leg portions to provide elongated vitiated air supply passages on either side adjacent said auxiliary pipe and also having outwardly diverging outer leg portions providing a shielded circulation zone,
said pipe and said wing member each having openings concentric with and downstream from each of said fuel nozzles to admit annular sheaths of auxiliary and vitiated air respectively around the fuel from said nozzle.

3,843,310
COMBUSTION CONTROL DEVICE

Giovanni Massi, No. 24, Via Genova, Rome, Italy

Filed Sept. 4, 1973, Ser. No. 394,196
Claims priority, application Italy, Sept. 6, 1972, 52583/72; Jan. 29, 1973, 47955/73
Int. Cl. F23n *1/02*
U.S. Cl. 431—90 **8 Claims**



1. A device for controlling the variations of a power stage of a gas burner as a function of the variation of the pressure of the gas being supplied thereto, said device comprising an electrovalve for choking the flow of gas in a conduit extending to the burner, a pressure sensitive device arranged to sense the pressure of the gas flowing in said conduit, and circuit means interconnecting said pressure sensitive device and the electrovalve which circuit means include a control board containing a predetermined program, said pressure sensitive device in response to at least two values of said gas pressure opening and closing said circuits to actuate the electrovalve so that the rate of gas feed to the burner is adjusted to change the power state thereof, said burner conduit having a by-pass line extending to a head of the burner to provide a pilot flame, said by-pass link including means for controlling flow therethrough, and wherein said pressure sensitive element also controls operation of the means for controlling flow in the by-pass line in response to the sensed pressure to enhance the variation in the rate of flow caused by operation of the electrovalve.

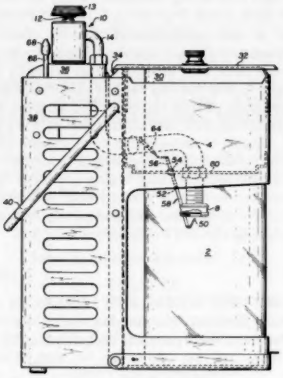
3,843,311
LANTERN WITH IGNITER

John M. Nelson, Rochester, N.Y., assignor to Bernzomatic Corporation, Rochester, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,813
Int. Cl. F21h *1/00*
U.S. Cl. 431—109 **10 Claims**

1. In a fluid fossil-fuel lantern comprising a lantern chamber, a fuel-air exit into said chamber, a mantle hanger sur-

rounding the fuel exit and a mantle disposed about the fuel exit, the improvement which comprises a piezoelectric starting element having a resistance wire ignition portion, said



ignition portion being inserted through the mantle hanger in a region of low pressure, the tip of the resistance wire being positioned in the region of the fuel-air exit into the mantle.

3,843,312

PIGMENTED SEALING WAX CANDLE

David E. Easterday, Parkville, Mo., assignor to Hallmark Cards, Inc., Kansas City, Mo.

Filed July 2, 1973, Ser. No. 375,361
Int. Cl. F23d *3/16*
U.S. Cl. 431—288 **3 Claims**

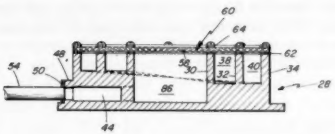
1. A sealing wax candle comprising a formed body comprising a natural wax in the amount of from 50 to 90 percent by weight, an ethylene/vinyl acetate copolymer in the amount of 9 to 20 percent by weight, a pigment up to and including 20 percent by weight, and a wick embedded in said body, said wick comprising textile strands treated with glucose pentaacetate.

3,843,313

MULTI-CAVITY RADIANT BURNER

Peter L. Helgeson, Macungie, Pa., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 382,092, July 23, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,708
Int. Cl. F23d *13/14*
U.S. Cl. 431—329 **4 Claims**



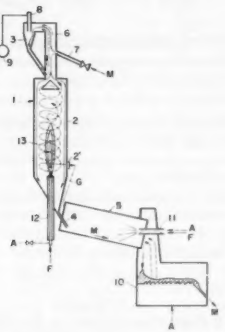
1. A multi-level radiant burner and control system for fluid-fueled ranges comprising a burner head including a chamber having an open side and separated into a plurality of cavities defined by upstanding walls, said cavities including a central cavity and at least one additional cavity encircling the central cavity, a combustion screen assembly mounted over said cavities, and means for attaching the screens to said walls, the bottom of said encircling cavity being inclined upwardly toward said screen, conduits in said head connected separately to the individual cavities therein, and control means for connecting said conduits to a source of fuel, said control means including distributing valve means operable to successively connect said conduits with a source of fuel.

3,843,314

SUSPENSION PREHEATER FOR FIRING SYSTEM

Yoshitaka Ishikawa, Tokyo, Japan, assignor to Sumitomo Shipbuilding & Machinery Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1973, Ser. No. 347,528
Claims priority, application Japan, Apr. 3, 1972, 47-32578
Int. Cl. F27b *15/00*
U.S. Cl. 432—58 **1 Claim**



1. A suspension preheater comprising:

1. a heat exchange shaft adapted to be substantially vertically disposed during use;
2. combustion means mounted in the lower portion of said heat exchange shaft for generating a bright flame along the vertical axis thereof;
3. means for introducing hot working gas into said heat exchange shaft so as to flow tangentially around its vertical axis in a helical flow leaving a relatively quiescent axial core in which said bright flame is generated, said means being located in the lower portion of said heat exchange shaft;
4. means for introducing particulate raw material into said heat excange shaft adjacent to its inner wall and remote from the relatively quiescent axial core, said means being located in the upper portion of said heat exchange shaft, whereby:

said particulate raw material will be displaced towards the inner wall of said heat exchange shaft by the centrifugal force of the helical flow of said hot working gases and the heavier particles will fall down in the form of a thin layer adjacent to the inner wall of said heat exchange shaft, separated from said bright flame by said hot working gases, while the lighter particles will be carried upward for further concentration and

said particular raw material will be subjected to radiant heat generated by said bright flame but will be melted by direct contact with it.

3,843,315

CONTINUOUS PASTRY OVEN

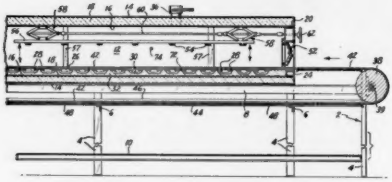
Elmer Sorensen, 8081 Estaro Blvd., Fort Myers Beach, Fla. 33931

Filed Feb. 20, 1973, Ser. No. 334,066
Int. Cl. F27b *9/24*
U.S. Cl. 432—122 **10 Claims**

1. In a continuous oven having an elongated baking chamber surrounded by heat-insulating walls and wherein a main

portion of baking heat is supplied conductively to the bottom of pastry by a pastry transport belt, the improvement wherein a conductive heating system is used comprising:

a. a heating plate located at the bottom of said baking chamber and extending longitudinally for substantially the entire length of said baking chamber, said heating plate being a good heat conductor and being from about one-half inch to about three-fourth inch thick;



b. heating means in contact with said heating plate to supply heat to said plate sufficient to maintain the surface thereof at an elevated temperature between about 200°F. and about 275°F.; and,

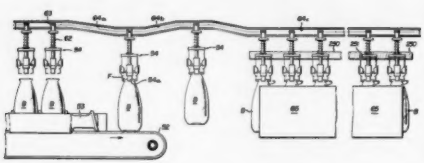
c. an endless transport belt formed from an adhesive material, the underside of said belt slidably and continuously engaging the top of said heating plate as it transports pastry through said baking chamber.

3,843,316

MACHINE FOR PRODUCING A PLASTIC-COVERED GLASS CONTAINER

Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket, both of N.Y., and Clarence A. Heyne, Sun City, Ariz., assignors to Owens-Illinois Inc., Toledo, Ohio

Division of Ser. No. 209,751, Dec. 20, 1971, Pat. No. 3,802,942. This application July 11, 1973, Ser. No. 378,383
Int. Cl. F27b 9/14
U.S. Cl. 432—124 **12 Claims**



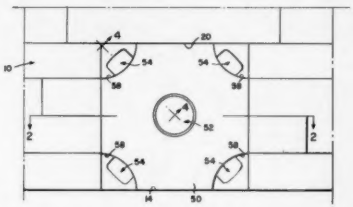
1. Container handling apparatus comprising endless conveyor means including a conveyor frame and conveying elements supported by said frame for movement along an endless path, a plurality of container-handling chucks, each of said chucks having a housing, means mounting said housing on said conveying elements for movement therewith in said endless path, said mounting means also slidably connecting each chuck housing to said conveying elements for sliding movement normal to said endless path, guide means on said frame engageable with each said housing controlling the position thereof on said conveying elements during movement along said endless path, a rod depending from said housing with its axis normal to said path, plural rockable chuck elements pivotally connected on said housing depending in a direction normal to said path, link means, means pivotally connecting the link means to said rod and each of said chuck elements for rocking movement of said elements to and from a container gripping position whereat said chuck elements are cooperable to grip and support a container in axial upright position and rod operating means comprising resilient means in said housing engaging said rod normally urging the latter in one axial direction, and means on said frame engageable with said rods during movement at selected locations along said endless path for axially moving the rod in the other direction.

3,843,317

BURNER MEANS FOR FURNACES

George Bickley Remmey, Huntingdon Valley, Pa., assignor to Bickley Furnaces Incorporated, Philadelphia, Pa.

Filed Apr. 10, 1973, Ser. No. 349,717
Int. Cl. F23d 15/00
U.S. Cl. 432—176 **17 Claims**



1. Burner means for a furnace having a wall for defining a furnace chamber comprising burner orifice means for supplying fuel at a high velocity directed toward the furnace chamber, means providing a combustion chamber aligned with said burner orifice means to receive said fuel and direct a high velocity stream along a straight path a substantial distance into the furnace chamber, and a recirculation means in the furnace wall at the downstream end of said combustion chamber, said recirculation means having an axial passage through which said high velocity stream from said combustion chamber passes as it moves to the furnace chamber, and recirculation passage means extending from communication with the furnace chamber to an upstream portion of said axial passage and being constructed and arranged so that the high velocity stream passing through said axial passage causes gases to be drawn from the furnace chamber through said recirculation passage means to the upstream end of said axial passage whereat said gases join said high velocity stream and recirculate into the furnace chamber.

CHEMICAL

3,843,318

PROCESS FOR DYEING CELLULOSE FIBRES

Hans-Ulrich von der Eltz, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 706,766, Feb. 20, 1968. This application Oct. 12, 1970, Ser. No. 80,155

Claims priority, application Germany, Feb. 28, 1967, F 51,665; Apr. 12, 1967, F 52,106

Int. Cl. D06p *1/02, 1/24, 1/68*

U.S. Cl. 8—1 L **5 Claims**

1. In a process for pad-dyeing textile materials made of or containing native or regenerated cellulose fibers with dyestuffs having as group capable of reacting with the hydroxyl groups of the fiber at least one β-(2,2,3,3-tetrafluoro - cyclobutyl) - acryloylamino or vinylsulfone group or sulfatoethylsulfone or thiosulfatoethylsulfone group, and fixing the dyestuffs according to the dwelling method, the improvement which comprises: using in said process, padding liquors containing, in addition to the said dyestuffs, as an agent having alkaline reaction, a liquid sodium silicate having a concentration in the range of from 37° to 60° Bé., corresponding to an SiO_2-content of the aqueous solution of 27.2 to 38.2 percent by weight, in an amount ranging from 25 grams to 350 grams per liter of padding liquor.

3,843,319

PROCESS FOR THE DYEING OF MIXTURES OF CELLULOSE AND POLYACRYLONITRILE FIBERS FROM ONE BATH

Hans-Ulrich von der Eltz, Frankfurt am Main, and Johannes Jeths, Weiskirchen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 864,563, Oct. 7, 1969. This application Jan. 27, 1972, Ser. No. 221,422

Claims priority, application Germany, Oct. 8, 1968, P 18 01 714.6

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 A **9 Claims**

1. A process for exhaust dyeing from a single bath a fibrous material containing a mixture of cellulose fibers and polyacrylonitrile fibers with a reactive dyestuff having at least one vinylsulfone reactive group or one group that forms a vinylsulfone reactive group in alkaline medium and with a non-reactive basic dyestuff, which comprises heating said material at a temperature between about 20° C. and about 80° C. in an aqueous dyebath that contains said reactive dyestuff, a non-ionic dispersing agent and an alkaline agent to adjust the pH of said dyebath to between about 9 and about 12 until said reactive dyestuff is fixed on the cellulose fibers, adding to said dyebath said non-reactive basic dyestuff and a free organic acid or inorganic acid to adjust the pH of said dyebath to between about 3.5 and about 6, and heating said material in said dyebath at a temperature between about 95° C. and about 130° C. until said basic dyestuff is fixed on the polyacrylonitrile fibers.

3,843,320

GRAFT POLYMERIZATION OF VINYL MONOMERS ONTO CHROME-TANNED HIDES AND SKINS

Stephen H. Feairheller, Wyndmoor, Alfred H. Korn, Maple Glen, Edward H. Harris, Jr., North Wales, and Edward M. Filachione and Maryann M. Taylor, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed May 31, 1972, Ser. No. 258,279

Int. Cl. C14c *11/00, 3/06*

U.S. Cl. 8—94.21 **8 Claims**

1. A process for graft polymerizing a vinyl monomer onto a chrome-tanned hide, comprising the following steps:

(a) placing in a container a chrome-tanned hide in wet, drained condition and a solution containing water, a surfactant-emulsifier, and a redox polymerization initiator system consisting of potassium persulfate and sodium bisulfite;

(b) adding to the mixture of step (a) sufficient Dry Ice to displace all the air in the container with CO_2;

(c) sealing the container and mixing the contents for about 30 minutes;

(d) adding to the mixed contents described in step (c) a monomer selected from the group consisting of acrylic acid, butyl acrylate, ethyl acrylate, ethylhexyl acrylate, methyl methacrylate, butyl methacrylate, acrylonitrile, styrene, methacrylic acid and mixtures thereof;

(e) adding to the mixture described in step (d) sufficient Dry Ice to again displace the air in the container with CO_2;

(f) resealing the container; and

(g) mixing the contents of the container as described in step (e) until polymerization of the monomer is complete and up to 30% of the formed polymer is graft copolymerized to the chrome-tanned hide.

3,843,321

METHODS OF RECOVERING WASTE FIBERS

Arthur H. Drelich, Plainfield, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

No Drawing. Filed Aug. 30, 1972, Ser. No. 285,389

Int. Cl. D06m *13/10, 11/14*

U.S. Cl. 8—141 **15 Claims**

1. A method of recovering waste fibers from a mixture of waste fibers and synthetic, cross-linked resin binder materials which coat or impregnate said waste fibers which comprises: heating said mixture of waste fibers and synthetic, cross-linked resin binder materials which coat or impregnate said waste fibers within the range of from about 212° F. to about 275° F. for a period of from about ¾ hour to about five hours in an aqueous treating solution containing an alkali metal hydroxide and a normally liquid, organic compound selected from the group consisting of hydrocarbon ketones, alcohols, lactones and sulfoxides, said normally liquid organic compound being sufficiently water-soluble as to be capable of forming aqueous solutions of at least about two percent by weight; adding a neutral or alkaline oxidizing agent to the mixture of waste fibers and synthetic, cross-linked resin materials; heating the mixture of waste fibers and synthetic, cross-linked materials in the presence of said neutral or alkaline oxidizing agent to partially decompose or solubilize the

synthetic, cross-linked resin; and recovering the waste fibers from the mixture of waste fibers and decomposed or solubilized synthetic, cross-linked resin materials.

3,843,322

DYESTUFF SOLUTION FOR ACRYLIC FIBERS

Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,536
Int. Cl. D06p 5/04
U.S. Cl. 8—169 **5 Claims**

1. An improved dyestuff solution suitable for the enhanced dyeing of acrylic and mixed acrylic fibers and fabrics, said solution consisting essentially of:

(a) a water-soluble complex of a cationic dye with a linear alkylarylsulfonic acid surface active agent said surface active agent being present in excess of the stoichiometric amount for said complex;

(b) a lower alcoholic solvent present in an amount within the range of from about 5% to about 25% by weight based on the total weight of said complex and said alcoholic solvent;

(c) a water-insoluble chlorinated hydrocarbon solvent having 1 to 3 carbon atoms, said chlorinated hydrocarbon solvent being present in an amount such that the dyestuff solution contains from about 0.1 to about 20 parts by weight of said complex per 100 parts of said hydrocarbon solvent;

(d) an alkalizing agent present in an amount sufficient to assure that the pH of said dyestuff solution is from about 2 to about 7.5; and

(e) water present in an amount sufficient to form a clear, stable solution of the complex in said solution containing said chlorinated hydrocarbon solvent and said lower alcoholic solvent,

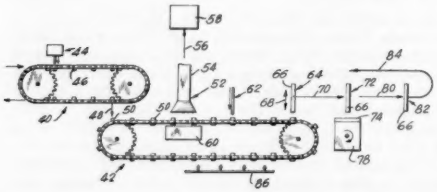
whereby the resulting clear, stable dyestuff solution is capable of producing a greater degree of brightness than conventional aqueous dyestuff solutions, the short dyeing time required with said dyestuff solution minimizing damage to the fiber being dyed and permitting increased dyed fiber production.

3,843,323

METHOD AND APPARATUS FOR SAMPLE EVALUATION

Babington A. Quame, 331 E. 29th St., New York, N.Y. 10016

Filed Oct. 4, 1972, Ser. No. 294,849
Int. Cl. G01n 1/14
U.S. Cl. 23—230 B **19 Claims**



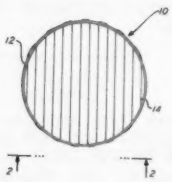
1. In a method for testing a plurality of urine samples to determine the presence of a drug such as narcotic analgesics, amphetamines, and addictive sedatives, the steps of first pouring a plurality of urine samples respectively into a series of first containers for providing in said first containers a series of mediums, respectively, which are adapted to receive an eluent, arranging said first containers respectively at locations where they are adapted to receive eluent simultaneously, pouring a given amount of an eluent which will elute at least said drug respectively into the series of first containers simultaneously for extracting said drug, if any, from the mediums respectively located in said series of first containers, simultaneously transferring the eluate from said series of first containers respectively into a series of second containers, simultaneously evaporating the solvent from said second containers to leave residues in the latter, simultaneously adding additional solvent to said residues in said second containers, simultaneously removing from said second containers a small portion of the solvents and residues dissolved therein, then simultaneously spotting a chromatographic plate with said removed solvents and the residues dissolved therein, and repeating the above steps to obtain a plurality of chromatographic plates each with a series of spots thereon, and repeating the above steps in a sequence according to which eluent is added to successive series of said first containers while evaporation of eluate in successive series of said second containers is carried out and while spotting of successive chromatographic plates is going forward.

3,843,324

METHOD OF CELL FRACTIONATION AND APPARATUS THEREFOR

Gerald M. Edelman, John L. Wang, Urs S. Rutishauser, and Clarke F. Millette, New York, N.Y., assignors to Research Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,815
Int. Cl. G01n 33/16
U.S. Cl. 23—230 B **23 Claims**



1. A device for selectively separating cells having predetermined immunoreactive factors attached thereto from a fluid containing said cells comprising:

(a) a frame,

(b) fibers under tension attached to said frame,

(c) and having chemically bonded to said fibers lyophilized material containing immunoreactive groups having molecular complementarity with said predetermined immunoreactive factors capable of forming bonds with said predetermined immunoreactive factors attached to said cells.

3,843,325

INDICATOR FOR THE DETECTION OF METAL IONS

Dieter Schmitt, Wilhelm Baumer, and Alfred Stein, Darmstadt, West Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, West Germany

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,444
Claims priority, application Germany, Dec. 15, 1971, P 21 62 122.7
Int. Cl. G01n 21/06
U.S. Cl. 23—230 R **14 Claims**

1. A shelf-stable absorbent colorimetric test strip suitable for use in detecting one or more metal ions selected from the group consisting of Ag^{+}, Cd^{++}, Hg^{+}, Cu^{++}, Ni^{++} and Co^{++}, which comprises an absorbent substrate homogeneously impregnated with 5–125 mg. per square

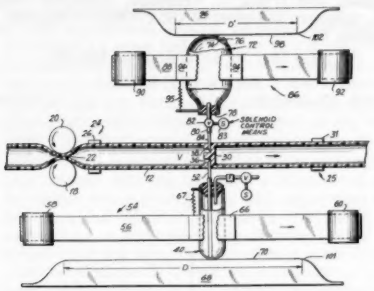
meter of surface area of a colorimetric indicator selected from the group consisting of alkali salts of dithizone and alkali salts of rubeanic acid.

3,843,326

METHOD AND APPARATUS FOR SUCCESSIVE SAMPLE ANALYSIS WITHOUT INTER-SAMPLE CONTAMINATION

Bernard Lichtenstein, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 7, 1972, Ser. No. 260,549
Int. Cl. B65b *1/04, 3/04;* **G01n** *31/00*
U.S. Cl. 23—259 **4 Claims**



1. Apparatus for the successive mixing of a series of samples with a reagent without inter-sample contamination comprising, elongated tubing means, means for moving said tubing means along a path, means disposed along said path for successively sealing said tubing means at spaced points thereon to form successive, spaced sealed tubing volumes which are isolated each from the other, means for puncturing said tubing means volumes, and means for supplying predetermined sample and reagent quantities into said tubing means volumes during the formation thereof and through punctures defined therein to result in spaced tubing means volumes each containing a sample-reagent mixture, said tubing means moving means and said means to form said spaced tubing means seals being cooperatively effective to expand said tubing means volumes during the formation thereof whereby said sample and reagent quantities may be drawn thereinto through said punctures during the tubing means volume formation.

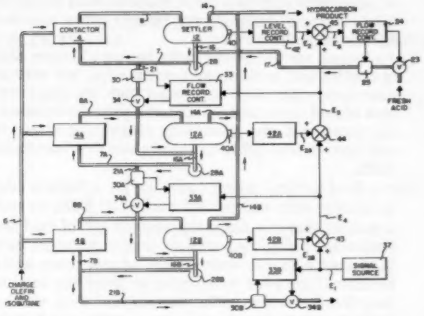
3,843,327

MEANS FOR CONTROLLING A CASCADE SYSTEM

Walker L. Hopkins and Richard R. Edwards, Groves, Tex., assignors to Texaco Inc., New York, N.Y.

Original application Feb. 24, 1971, Ser. No. 118,374, now Patent No. 3,720,730, dated Mar. 13, 1973. Divided and this application June 19, 1972, Ser. No. 263,802
Int. Cl. C07c *3/12*
U.S. Cl. 23—260 **6 Claims**

1. Apparatus for controlling the levels of a liquid in a plurality of vessels in a system receiving and discharging the liquid, said vessels being connected in series by means for conveying the liquid from vessel to vessel, comprising a pair of control devices, one control device is connected to a first vessel of the plurality of vessels and is responsive to a first control signal to control the flow rate of the liquid being received by system and entering the first vessel, the other control device is connected to a last vessel of the plurality of vessels and is responsive to a second control signal to control the liquid leaving the last vessel and being discharged from the system, means connected to each vessel for sensing the liquid level in the vessel and providing a liquid level signal corresponding thereto, means connected to the one control device to affect the flow rate of the liquid being received by the system and entering the first vessel, means connected to each conveying means for sensing the flow rates of the liquid moving between vessels and providing flow rate signals coresponding thereto, means connected to each conveying means and to the flow rate sensing means for affecting the flow rates of the liquid between vessels in accordance



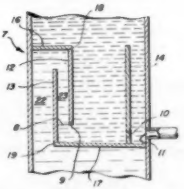
with command signals and the flow rate signals, and circuit means connected to the first control signal means, to the liquid level sensing means, to the other control device and to the flow rate affecting means for providing the second control signal to the other control device in accordance with the first control signal and at least one liquid level signal and for providing the command signals to the flow rate affecting means in accordance with the first control signal and at least one liquid level signal so as to control the liquid levels in the plurality of vessels.

3,843,328

STAGE SEPARATOR FOR LIQUID-LIQUID MULTI-STAGED PACKED TOWER

Robert E. Bosanac, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 23, 1973, Ser. No. 408,569
Int. Cl. B01d *11/04*
U.S. Cl. 23—270.5 **3 Claims**



1. In a liquid-liquid countercurrent tower comprising a plurality of contiguous contacting stages, each of said stages comprising a fixed packed bed occupying a portion of a single vertical tower, the improvement within said tower between each of said stages comprising;

(a) a first horizontal baffle spanning a portion of the inner cross section of said tower having a portion of its outer perimeter in contact with the inner surface of said tower and the remainder of said perimeter forming a first internal edge,

(b) a first vertical planar baffle having a top edge in contact with said first internal edge, two vertical outermost edges each in contact with inner surface of said tower and a horizontal bottom edge terminating in a saw-toothed edge to distribute the upcoming liquid across the entire edge,

(c) a second substantially horizontal baffle displaced below the edge containing distributing means of said first vertical planar baffle, spanning a portion of the inner cross section of said tower having a portion of its outer perimeter in contact with the inner surface of said tower such that the remainder of its perimeter forms a second internal edge entirely below said first horizontal baffle surface,

(d) a second vertical planar baffle having a bottom edge in contact with said second internal edge, two vertical outermost edges each in contact with the inner surface of said tower and a horizontal top edge terminating above said edge containing distributing means of said first vertical baffle and below said first horizontal baffle,

(e) a third vertical planar baffle having a bottom edge in contact with said second horizontal baffle in such a manner that it is not under any portion of said first horizontal baffle, two vertical outermost edges each in contact with the inner surface of said tower and a horizontal top edge terminating at about the level of said first horizontal baffle wherein said third vertical baffle has at least one passageway near said bottom edge to allow passage of liquid,

(f) an outlet, in the tower for removal of liquid located slightly above the second horizontal baffle between the outermost edges of said third vertical baffle on the side opposite to that of the first and second vertical baffles, and

(g) said second substantially horizontal planar baffle being sloped to allow liquid to flow from the inner side of the third vertical surface through the passageway and out the outlet.

3,843,329

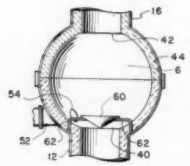
APPARATUS FOR OXIDIZING WASTE MATERIALS

Delton K. Longley, 3537 Cripple Creek, Dallas, Tex. 75224

Filed Nov. 15, 1972, Ser. No. 306,680

Int. Cl. F23c 9/04; F23g 7/06

U.S. Cl. 23—277 C **9 Claims**



1. Apparatus for oxidizing combustible materials in a fluid stream comprising

(a) means defining a spherical chamber, an inlet port positioned in the lower portion of said chamber through which the fluid stream is introduced into the chamber, and an outlet port positioned substantially diametrically opposite said inlet port and through which the oxidized materials pass, and

(b) means for introducing a flame and a stream of air into said chamber through an opening in the lower portion of said chamber at an angle upward from the horizontal and tangential to the interior wall of said chamber to thereby cause oxidation of the combustible material in said stream.

3,843,330

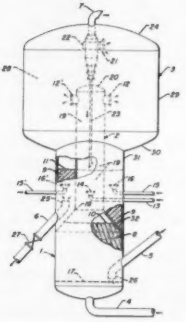
REGENERATION APPARATUS

Algie J. Conner, Downers Grove, Daniel Dudych, Des Plaines, and Willas L. Vermilion, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 30, 1972, Ser. No. 258,135

Int. Cl. B01j 9/20

U.S. Cl. 23—288 B **2 Claims**



1. A catalyst regeneration apparatus for oxidizing coke on a spent catalyst with a fresh regeneration gas and oxidizing carbon monoxide (produced by the oxidation of coke) within said apparatus comprising in combination:

(a) a regeneration vessel having disposed therein, a spent catalyst receiving chamber, a regenerated catalyst receiving chamber, and a transfer conduit and catalyst-regeneration gas separation means interposed between said spent catalyst and regenerated catalyst receiving chambers;

(b) said spent catalyst receiving chamber having upper and lower sections, a fresh regeneration gas inlet means connected to said spent catalyst receiving chamber at said lower section to allow passage of fresh regeneration gas into said spent catalyst receiving chamber through said lower portion, a spent catalyst inlet means connected to said spent catalyst receiving chamber to allow passage of spent catalyst into said spent catalyst receiving chamber, said spent catalyst receiving chamber positioned to maintain a dense bed of spent catalyst within the spent catalyst receiving chamber and to allow passage of a mixture of regenerated catalyst and regeneration gas containing carbon monoxide out of said spent catalyst receiving chamber through a catalyst-gas outlet positioned in the upper section of said spent catalyst receiving chamber;

(c) said vertically disposed transfer conduit being located wholly within a hereinafter described regen-

erated catalyst receiving chamber, said conduit having a cap closing the top thereof, an upper outlet means in said conduit positioned to discharge laterally within said upper section of said regenerated catalyst receiving chamber, a lower inlet means connected to said spent catalyst receiving chamber to allow passage of said mixture of regenerated catalyst and regeneration gas from said spent catalyst chamber through said conduit, and a means for effecting combustion located between the upper outlet means and the lower inlet means of said conduit;

(d) said catalyst-regeneration gas separation means adapted to separate said mixture of regenerated catalyst and regeneration gas, having an inlet for receiving said mixture, a regenerated catalyst outlet and a regeneration gas outlet said inlet connected to said upper outlet of said transfer conduit; and

(e) said regenerated catalyst receiving chamber for maintaining a dense bed of regenerated catalyst being in communication with said separation means outlets and having an upper section and a lower section, a regeneration gas outlet means connected to said regenerated catalyst receiving chamber at its upper section to allow passage of regeneration gas substantially free of regenerated catalyst from said regenerated catalyst receiving chamber, a regenerated catalyst outlet means connected to said regenerated catalyst receiving chamber, the lower section of said regenerated catalyst receiving chamber being separated from the upper portion of said spent catalyst receiving chamber by a wall means whereby to maintain said bed of regenerated catalyst segregated from the dense bed of catalyst in said spent catalyst receiving chamber.

3,843,331

APPARATUS FOR PRODUCING A RADIALLY UNIFORM RESISTANCE CHARACTERISTIC IN A SEMICONDUCTOR CRYSTAL BY USE OF HIGH FREQUENCY SONIC VIBRATIONS

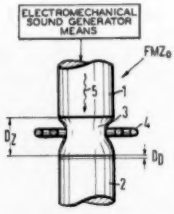
Wolfgang Keller, Walter Lugscheider, and Alfred Muehlbauer, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of application Ser. No. 283,320, Aug. 24, 1972. This application Dec. 1, 1972, Ser. No. 311,380

Claims priority, application Germany, Dec. 2, 1971, P 21 59 916.6

Int. Cl. B01j *17/00*

U.S. Cl. 23—301 SP **15 Claims**



1. In a method of producing a radially uniform resistance characteristic in a semiconductor crystal rod that includes positioning the semiconductor rod in a floating melt zone operational environment and subjecting said rod to axially directed sonic oscillations, the improvement comprising, electrically generating said sonic oscillations at a frequency higher than 20 kHz. by an electromechanical sound generator means and transferring said sonic oscillations to said rod.

3,843,332

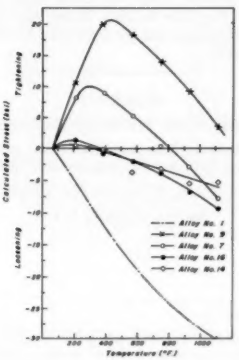
COMPOSITE ARTICLE WITH A FASTENER OF AN AUSTENITIC ALLOY

Lynn E. Kindlimann, Milford, Conn., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1970, Ser. No. 100,078

Int. Cl. B22f *5/00;* **B32b** *15/00*

U.S. Cl. 29—183 **19 Claims**



1. A composite article comprised of a ferritic steel member fastened to a second metallic member with a fastener formed from a controlled expansion austenitic alloy consisting essentially of, in weight percent, from 36 to 54% nickel, up to 12% cobalt, up to 15% chromium, up to 10% molybdenum, from 1 to 3.75% titanium, up to 2% aluminum, up to 0.1% carbon, up to 2% manganese, up to 1% silicon, up to 0.05% boron, balance essentially iron; said percentage of iron being at least 24%; said percentage of nickel plus said percentage of cobalt and said percentage of chromium plus said percentage of molybdenum corresponding to the area ACEFA in FIG. 3; said percentage of nickel being effective nickel in accordance with the equation:

Percent effective Ni=percent actual
Ni−2.4[(percent Ti−2.8)−4(percent C)]

3,843,333

ALUMINUM BRAZING SHEET

Ralph A. Woods, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed Aug. 31, 1973, Ser. No. 393,461

Int. Cl. B23p *3/00*

U.S. Cl. 29—191 **6 Claims**

1. A clad aluminum brazing sheet comprising a relatively high melting point aluminum alloy core and clad to said core a relatively low melting point aluminum alloy consisting essentially of 5–13% silicon, up to 3% magnesium, 0.8% maximum iron, 0.25% maximum manganese, 0.25% maximum copper, 0.20% maximum zinc, 0.10% maximum other elements each and the balance aluminum, said low melting point alloy cladding characterized by substantially all of the silicon particles being

less than 7 microns in maximum dimension and a majority of the silicon existing as particles from about 0.5 to 5.0 microns in maximum dimension.

3,843,334

FLAME-SPRAYABLE COMPOSITION OF NICKEL COATED MOLYBDENUM

John E. Cromwell, Baltimore, Md., assignor to Koppers Company, Inc.

Filed May 27, 1970, Ser. No. 41,038

Int. Cl. B32b *15/00*

U.S. Cl. 29—191.2 **17 Claims**

1. A flame sprayable composition comprising discrete particles consisting essentially of a nucleus of molybdenum and a coating layer of nickel wherein the composition of the particles is from about 62.5% to 38.0% by weight molybdenum and by difference 37.5% to 62.0% by weight nickel.

3,843,335

PLATED WIRE MEMORY ELEMENT

James O. Holmen, Minnetonka, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 4, 1971, Ser. No. 185,997

Int. Cl. B32b *15/00*

U.S. Cl. 29—194 **11 Claims**

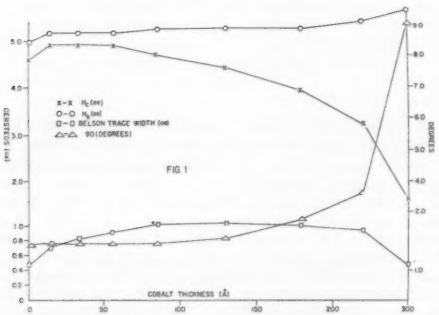


FIG. 1

1. A plated wire memory element comprising:

non-magnetic, metallic wire substrate,

a non-magnetic, metallic coating of controlled roughness deposited and on said substrate,

a thin, discontinuous layer of a material selected from the group consisting of cobalt, nickel and iron, and magnetic alloys thereof deposited atop and enhancing the roughness of said non-magnetic coating, and

a zero-magnetostrictive magnetic layer of nickel-iron alloy deposited atop said discontinuously coated non-magnetic, metallic coating.

3,843,336

ARTIFICIAL FIREPLACE LOG

Henry C. Messman, Larchmont, N.Y., assignor to The Kingsford Company, Louisville, Ky.

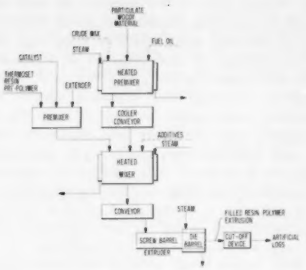
Filed Aug. 31, 1972, Ser. No. 285,370

Int. Cl. C10l *5/00, 5/14, 5/40*

U.S. Cl. 44—25 **44 Claims**

1. A combustible artificial fireplace log comprising:

an extruded, highly filled, thermosetting resin skeleton forming a more concentrated outer surface surrounding a porous less concentrated interior matrix of said resin;



said skeleton being filled with particulate woody materials, and said log having a preselected quantity of at least one petroleum derivative hydrocarbon absorbed therein.

3,843,337

BENZOTRIAZOLE AND TOLYLTRIAZOLE MIXTURES

Charles J. Korpics, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Original application June 14, 1971, Ser. No. 152,528, now Patent No. 3,803,049. Divided and this application Mar. 9, 1973, Ser. No. 339,528

Int. Cl. C10l *1/22*

U.S. Cl. 44—63 **1 Claim**

1. A solution of a benzotriazole and tolyltriazole in benzene, consisting of a mixture of from 2 to 98 percent of benzotriazole and from 98 to 2 percent of tolyltriazole, where the total amount of triazole dissolved is a function of the proportion of benzotriazole and tolyltriazole present in the solution, and is represented by the shaded area between Curves A and B of FIG. 5 of the attached drawing.

3,843,338

GASEOUS FUEL CARBURETOR INCLUDING IMPROVED METERING AND DISTRIBUTION SYSTEMS

Lawrence C. Zonker, Los Angeles, and Ervin F. Jensen, Santa Monica, Calif., assignors to Beam Products Manufacturing Company, Los Angeles, Calif.

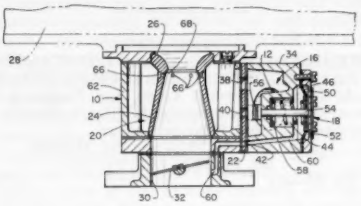
Filed Dec. 8, 1972, Ser. No. 313,471

Int. Cl. F02m *21/02*

U.S. Cl. 48—180 C **12 Claims**

1. In a carburetor for a gaseous fuel engine and the like; the combination of: a carburetor body; a venturi formed in said body having an air inlet, an intermediate throat and an air-fuel outlet; butterfly valve means in said venturi air-fuel outlet selectively operable between closed and various open positions for supplying an air-fuel mixture to an engine; fuel nozzle means at said venturi throat for directing fuel into said venturi; gaseous fuel inlet means for supplying fuel to said body; partition means in said body having a main fuel orifice of determined size therethrough and an auxiliary fuel orifice of determined size therethrough; fuel directing means operably connecting said gaseous fuel inlet means to said main fuel orifice and to said auxiliary fuel orifice and from said orifices to said fuel nozzle means of said venturi, said fuel directing means including an inlet fuel metering chamber having a wall thereof formed by said partition means with said

main and auxiliary fuel orifices opening into said chamber for receiving fuel flow therefrom, vacuum actuated control valve means operably connected for sensing engine manifold vacuum and having a valve member mov-



able between a closed position closing said auxiliary fuel orifice upon vacuum above a determined level being sensed and an open position opening said auxiliary fuel orifice upon said vacuum being sensed dropping below said determined level.

3,843,339

PROCESS FOR FLUIDIZED COMBUSTION OF PLASTICS

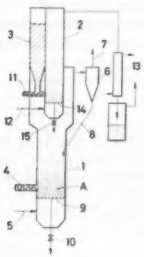
Kiyosi Saito, Sapporo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Sept. 20, 1973, Ser. No. 399,243

Claims priority, application Japan, Sept. 22, 1972 47/95,599

Int. Cl. C10b *57/00*

U.S. Cl. 48—197 R **6 Claims**



1. A process for the disposal of a polyolefinic plastic which comprises dividing said polyolefinic plastic into at least two portions and subjecting a portion of the polyolefinic plastic in conjunction with a fluidizing medium to fluidized combustion by means of air of an amount exceeding the amount theoretically required for combustion of said plastic thereby gasifying the plastic, simultaneously fusing the remaining portion of the polyolefinic plastic with the heat generated by said fluidized combustion and, while maintaining the fused polyolefinic plastic in a liquid form by utilizing the heat of the aforementioned combustion, fluidizing and partially oxidizing the fused polyolefinic plastic in conjunction with a fluidizing medium by means of an amount of oxygen insufficient for complete combustion thereby producing a hydrocarbon gas and cooling said gas for thereby obtaining hydrocarbon oils and hydrocarbon gases useful as industrial raw materials.

3,843,340

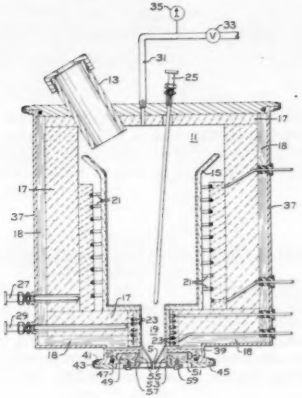
METHOD AND APPARATUS FOR PRODUCING GLASS BEADS

Eugene J. Cone, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 3, 1973, Ser. No. 356,971

Int. Cl. C03b *19/10*

U.S. Cl. 65—21 **15 Claims**



1. A method of forming glass beads comprising:
(a) melting a glass batch in a furnace to form a glass melt having a viscosity less than 100 poises,
(b) conducting the glass melt to a nozzle area in said furnace,
(c) forcibly discharging the glass melt through a small-diameter orifice having a diameter of 0.002 to 0.125 inch in said nozzle under a pressure of 1 to 20 pounds per square inch to form a glass jet,
(d) directing the glass jet outwardly from said orifice whereby the glass jet breaks apart into particles due solely to flow instabilities of the glass jet, and said particles, under the influence of surface tension, form glass beads having a diameter of approximately twice that of said orifice, and
(e) cooling said glass beads to room temperature.

3,843,341

METHOD OF MAKING THERMALLY STABLE AND CRUSH RESISTANT MICROPOROUS GLASS CATALYST SUPPORTS

Joseph J. Hammel and Ties Allersma, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of abandoned applications Ser. No. 231,346, Mar. 2, 1972, and Ser. No. 264,081, June 19, 1972. This application Dec. 1, 1972, Ser. No. 311,191

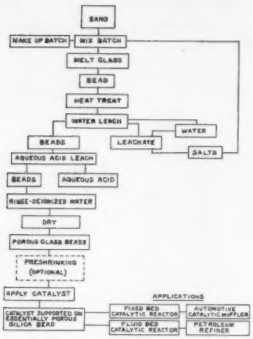
Int. Cl. C03c *15/00*

U.S. Cl. 65—22 **20 Claims**

1. A method for making a low alkali-containing porous glass article having a high thermal stability comprising:
(a) heating a phase-separable alkali-borosilicate glass to a temperature sufficient to separate the glass into two phases, one of which is a borate-rich phase and is soluble in an aqueous solution,
(b) a first leaching of the phase-separated glass with water for a time and at a temperature sufficient to

remove a major portion of the borate-rich phase to form a porous glass high in silica,

(c) a subsequent leaching of the previously leached porous glass with an acid for a time and at a temperature sufficient to remove sufficient alkali and borate not removed in the first leaching to provide a low alkali-borate containing microporous glass structure having a high thermal stability.



3,843,342
GLASS CERAMIC AND PROCESS THEREFOR
George A. Simmons, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Original application June 17, 1966, Ser. No. 558,238, now abandoned. Divided and this application Aug. 17, 1971, Ser. No. 144,315
The portion of the term of the patent subsequent to Mar. 3, 1987, has been disclaimed
Int. Cl. C03c *21/00*; C03b *31/00*
U.S. Cl. 65—30 **1 Claim**

1. A process of making an article of glass-ceramic which comprises

(1) forming an article from a thermally crystallizable glass containing at least one ingredient that is lithia that combines with alumina and silica to provide bulk crystallization by a heat treatment, a nucleant present in sufficient concentration for the bulk crystallization, and sodium oxide in a concentration that inhibits the rate of said bulk crystallization without preventing surface crystallization of said glass,

(2) heat treating the article of glass at an elevated temperature sufficient to provide crystallization of a surface layer of the article while the main body portion remains a glass, and

(3) heat treating the surface crystallized article at a higher elevated temperature to convert the main body portion by bulk crystallization to a glass-ceramic,

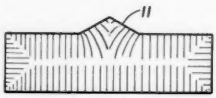
said lithia being present in a sufficient concentration in the thermally crystallizable glass to provide, in absence of said rate-inhibiting sodium oxide, bulk crystallization uniformly throughout the article, and said surface layer having a lower coefficient of linear expansion than that of the main body portion of the article of glass-ceramic, and thereafter

(4) heating a surface layer of the article to an elevated temperature sufficiently high to convert the glass-ceramic of the surface layer to glass while maintaining the main body of the article as glass-ceramic,

(5) ion-exchanging the surface layer after its conversion to glass to replace at least part of the sodium ions by lithium ions, and

(6) heat treating the article to convert the glass of the surface layer to glass-ceramic containing beta-eucryptite as predominant crystal whereby said surface layer has a lower expansion coefficient than that of the main body portion.

3,843,343
METHOD OF PRODUCING A CRYSTALLIZED GLASS BODY WITH SURFACE PATTERNS
Takeshi Okada, Hiroyuki Asada, and Shigeharu Nakamura, Otsu, Japan, assignors to Nippon Electric Glass Company, Limited, Shiga-ken, Japan
Filed Apr. 12, 1973, Ser. No. 350,336
Int. Cl. C03c *3/22, 19/00*
U.S. Cl. 65—33 **4 Claims**



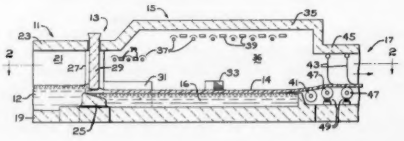
1. A method of producing a crystallized glass body having a surface pattern, comprising the steps of:

(A) forming a glass body with a projecting portion from a surface of the glass body, said glass body having a composition capable of being crystallized by heat treatment to precipitate needle-like β-wollastonite crystals extending inwardly from the surface of the body in a direction normal to the surface, and

(B) subjecting the glass body to heat treatment sufficient to precipitate needle-like β-wollastonite crystals, said precipitated needle-like crystals in the projection and the needle-like crystals in the other region of the surface of the body being different in precipitated direction; and

(C) polishing the projecting portion to the surface of the body whereby a surface pattern results in the glass body.

3,843,344
METHOD OF AND APPARATUS FOR FORMING SHEET GLASS ON MOLTEN METAL
William F. Galey, Saxonburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 6, 1973, Ser. No. 338,475
Int. Cl. C03b *18/02*
U.S. Cl. 65—65 A **9 Claims**



1. In the apparatus for manufacturing a continuous sheet of glass comprising a glass making furnace, having a melting region and a refining and condition region; a forming chamber, having therein a pool of molten metal and a protective atmosphere thereabove, connected to said furnace at its refining and conditioning region through means for delivering molten glass from said furnace refining and conditioning region to said forming chamber onto said pool of molten metal; and means for withdrawing said continuous sheet of glass from said forming chamber,

wherein said delivery means includes means for separating said glassmaking furnace from said forming chamber, said operating means sharing an opening through which molten glass may flow, the improvement comprising:

(a) a barrier extending transversely across said conditioning region beneath the opening in said wall, said barrier separating the bottom of said conditioning region into two parts, an upstream part and a downstream part, the downstream part being closest said forming chamber and being in communication therewith; and

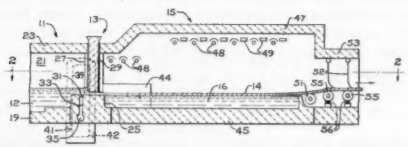
(b) molten metal in said downstream part of said conditioning region extending through the opening in said separating means and being in communication with and having the same elevation as said pool of molten metal in said forming chamber, the elevation of said molten metal being substantially the same as that of said barrier.

3,843,345

METHOD AND APPARATUS FOR DELIVERY OF MOLTEN GLASS TO A FLOAT FORMING PROCESS

William C. Harrell, Sarver, and Homer R. Foster, Kittanning, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1973, Ser. No. 338,496
Int. Cl. C03b *18/02*
U.S. Cl. 65—65 A **14 Claims**



1. In the method of manufacturing a continuous sheet of glass comprising the steps of delivering a stream of molten glass onto a pool of molten metal, conveying the glass along the surface of said pool of molten metal, cooling said glass to form a dimensionally stable continuous sheet of glass and withdrawing said continuous sheet of glass from said pool of molten metal whereby the bottom surface of said sheet of glass is characterized by non-homogenous defects, the improvement comprising

(a) discharging said stream of molten glass across a support such that said stream of molten glass has an upper, exposed surface and a lower surface in contact with said support;

(b) separating said stream of molten glass on said support into two portions, the first portion including glass in contact with said support and the second portion including glass constituting said exposed surface;

(c) removing said first portion of molten glass; and

(d) delivering said second portion of molten glass onto said pool of molten metal, whereby a continuous sheet of glass is formed having a bottom surface characterized as being substantially defect-free.

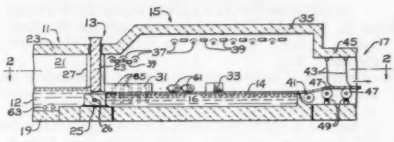
3,843,346

MANUFACTURE OF SHEET GLASS BY CONTIGUOUS FLOAT PROCESS

Charles K. Edge, Sarver, and Gerald E. Kunkle, New Kensington, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1973, Ser. No. 338,497
Int. Cl. C03b *18/02*
U.S. Cl. 65—65 A **35 Claims**

1. In the process of continuously forming a layer of glass on a supporting pool of molten metal wherein molten glass from a pool of molten glass is discharged substantially horizontally from a region as a layer onto the supporting pool of molten metal which has an upper surface at substantially the same elevation as that of the



discharge layer of glass, the improvement which comprises the step of cooling the molten glass adjacent the discharge region sufficiently to cause molten glass in the pool of molten glass to flow at an increased rate to the discharge region.

3,843,347

MICROBIOCIDAL SULFOXONIUM HALIDE DIIODIDES

Robert J. Herschler and Merle E. Cisney, Camas, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Continuation of abandoned application Ser. No. 430,695, Feb. 5, 1965. This application Feb. 1, 1971, Ser. No. 111,734
Int. Cl. A01n *9/14*
U.S. Cl. 71—67 **4 Claims**

1. A method of inhibiting the growth of green algae comprising contacting the green algae with a growth inhibiting amount of a trimethyl sulfoxonium halide diiodide, wherein said halide is selected from the group consisting of chloride and iodide.

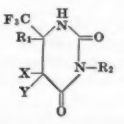
3,843,348

USE OF 6-(TRIFLUOROMETHYL)HYDROURACILS AS HERBICIDES

Albert William Lutz, Montgomery Township, Somerset County, and Richard William Feeny, Hightstown, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Mar. 17, 1970, Ser. No. 20,382, now Patent No. 3,669,770. Divided and this application Feb. 16, 1972, Ser. No. 226,959
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **9 Claims**

1. A method for the control of undesirable plant species comprising applying to a locus to be protected from said plant species a herbicidally effective amount of at least one compound represented by the formula:



wherein X is selected from the group consisting of halogen and lower alkyl of C_1–C_4; Y is halogen; R_1 is selected from the group consisting of halogen, hydroxy, alkoxy of C_1–C_6, and mono- and di-haloalkoxy of C_1–C_6; and R_2 is selected from the group consisting of hydrogen; alkyl of C_1–C_6; alkenyl of C_2–C_6; mono- or di-substituted alkyl of C_1–C_6 having a substituent selected from the group consisting of halogen, hydroxy and lower alkoxy of C_1–C_4; phenyl; cyclohexyl; cyclopentyl; and mono- or di-substituted phenyl having a substituent selected from the group consisting of nitro, halogen, lower alkoxy of C_1–C_4, mono- or di-haloalkoxy of C_1–C_6 and trifluoromethyl, and the tautomers thereof and the water soluble sodium, po-

tassium and ammonium salts of said compounds and tautomers, wherein said halogen and halo substituents are selected from the group consisting of fluorine, chlorine, bromine and iodine.

3,843,349

METHOD OF MAKING FINE POWDERS

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, Mass., assignors to Graham Magnetics, Inc., Graham, Tex.

No Drawing. Continuation-in-part of application Ser. No. 228,387, Mar. 24, 1971, which is a continuation-in-part of application Ser. No. 128,812, Mar. 24, 1971, which in turn is a continuation-in-part of application Ser. No. 127,514, Mar. 24, 1971. This application June 6, 1973, Ser. No. 367,461

Int. Cl. H01f 1/06

U.S. Cl. 75—.5 BA 54 Claims

1. A method of making ferromagnetic particles or metallic particles comprising the steps of coating a mass of particles of a salt of a metal and an organic acid with a film forming organic material reducing said coated salt particles in a gaseous reducing atmosphere to metal particles, and cooling the metal particles below their sintering temperature, said reduction and cooling being carried out while maintaining the metal particles in the presence of either the separation medium or a thermal decomposition residue thereof.

3,843,350

NOVEL CONDUCTIVE METALLIZATIONS

John Robert Larry, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 27, 1973, Ser. No. 428,718

Int. Cl. H01b 1/02; B44d 1/18

U.S. Cl. 75—.5 R 12 Claims

1. Powder compositions useful for producing low-cost, air-fireable conductor patterns adherent to dielectric substrates, said compositions consisting essentially of finely divided silver particles and finely divided palladium/copper alloy particles; there being at least 35% by weight Pd in said alloy particles, based on total weight of Pd and Cu therein; and the weight ratio of palladium/copper alloy to silver being in the range of 0.1/1 to 0.5/1.

3,843,351

METHOD AND APPARATUS FOR SEPARATING A CONSTITUENT OF A COMPOUND, SUCH AS A METAL FROM AN ORE, BY CHEMICAL REACTION AND PHYSICAL SEPARATION USING A PLASMA IN THE PRESENCE OF A MAGNETIC FIELD

Alan W. Smith and Donald J. Nelson, Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 24, 1973, Ser. No. 363,763

Int. Cl. B01k 1/00; B03c 1/00; C22d 7/00

U.S. Cl. 75—10 R 19 Claims

1. A process for separating a constituent of a compound from the compound, comprising:

chemically reacting the compound with a reducing agent to produce the constituent and a product of the reduction reaction; and

separating the constituent from the product of the reaction;

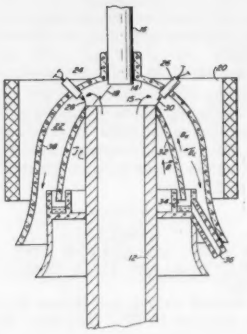
said step of separating the constituent from the product of the reduction reaction including partly ionizing the constituent in a gaseous state;

flowing the partly ionized gaseous constituent together with a gaseous product of the reduction reaction through a magnetic field B at a velocity v;

said magnetic field B being configured relative to said gas velocity v such that at least the partly ionized constituent moves at an angle relative to the magnetic field B;

permitting the current J created by the interaction of the moving electrons of the partly ionized constituent with the perpendicular component of the magnetic field $B_\perp$ to flow in a closed path;

using said current J flowing in a closed path to interact with the parallel component $B_\parallel$ of the magnetic field B to generate a separating force acting upon the partly ionized constituent; and



collecting the partly ionized constituent apart from the gasous product;

whereby said constituent is removed from said product at containment temperature substantially lower than if said constituent were directly removed from said product using the separation process without first reducing the compound.

3,843,352

METHOD FOR MELTING SPONGE METAL USING GAS PLASMA IN A COOLED METAL CRUCIBLE

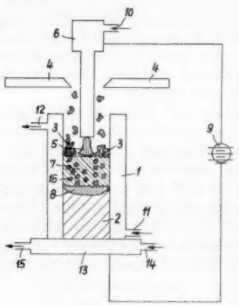
Klaus-Herbert Ulrich, Essen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 28, 1972, Ser. No. 293,031

Claims priority, application Germany, Oct. 4, 1971, P 21 49 407.5

Int. Cl. C22d 7/00

U.S. Cl. 75—10 R 3 Claims



1. A method for melting sponge metal and removing impurities from it comprising: providing a metal crucible containing a sump region of molten metal covered by a molten slag; feeding sponge metal in the solid state, and having an effective density less than the density of the slag, onto said slag so that the solid state sponge metal

floats on said slag; directing a plasma stream onto the sponge metal on said slag to change the solid sponge metal into molten droplets which fall through the molten slag into the molten metal sump region, with the slag removing impurities from the droplets as they pass through the slag; and cooling said crucible to maintain a continuous solidification of the lower surface of the sump region of molten metal.

3,843,353
PREPARATION OF METAL FOAMS OF ALUMINUM

Leonard M. Niebylski, Birmingham, and Chester P. Jarema, Detroit, Mich., and Thomas E. Lee, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Application Mar. 10, 1971, Ser. No. 123,099, which is a continuation-in-part of abandoned application Ser. No. 63,666, Aug. 13, 1970, which in turn is a continuation-in-part of abandoned applications Ser. No. 800,724 and Ser. No. 800,745, both Feb. 19, 1969. Divided and this application Feb. 5, 1973, Ser. No. 329,376

Int. Cl. C21b

U.S. Cl. 75—20 F **5 Claims**

1. Process for increasing the viscosity of molten substantially pure aluminum with a gaseous viscosity-increasing agent, said process comprising introducing into said aluminum at a temperature of from about 20° to about 90° C. above the liquidus temperature of said metal from about 0.02 to about 10 grams of air per each 100 gram portion of metal.

3,843,354
PNEUMATIC REFINING OF PIG IRON

Paul-Emile Nilles, Embourg, and Leon Jean Philippe, Liege, Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,279

Claims priority, application Belgium, Feb. 11, 1971, 762,837

Int. Cl. C21c *7/08*

U.S. Cl. 75—52 **11 Claims**

1. A pig iron refining process carried out in a converter having at least one tuyere comprising an inner tube within an outer tube, the process including

(a) a first phase comprising the sequential steps of

(i) blowing a reducing fluid in through the outer tube, and simultaneously blowing a suspension of lime in a non-oxidizing carrier gas through the inner tube, whereby a slag is formed in the converter; and

(ii) removing from the converter at least part of the slag; and

(b) a second phase comprising blowing a fluid consisting of an oxygen-containing gas whose major component is oxygen through the inner tube, and simultaneously blowing a protective fluid through the outer tube.

3,843,355
METHOD FOR MELTING AND PURIFYING MAGNESIUM

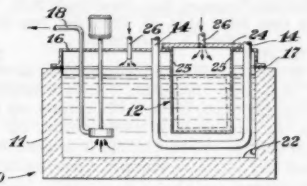
John N. Reding, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 4, 1972, Ser. No. 240,933

Int. Cl. C22b *45/00*

U.S. Cl. 75—67 **33 Claims**

1. A method comprising sequentially melting magnesium having nonmetallic contaminants in a salt flux free, protective gas atmosphere, melting means with wall portions defining at least one hole therethrough, the hole being of sufficient size and configuration to retain nonmetallic contaminants within the melting means; flowing the molten magnesium through the hole from the melting means into an adjacent holding means and retaining



nonmetallic contaminants within the melting means; and removing the molten magnesium from the holding means.

3,843,356
MAGNESIUM ADDITION ALLOY

Patrick D. Renschen and Nathan L. Church, Warwick, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,261

Int. Cl. C22c *33/00*

U.S. Cl. 75—130 A **3 Claims**

1. An addition alloy for introducing magnesium into molten cast iron with minimal accompanying smoke and flare consisting essentially of about 4% to about 5.5% magnesium, about 0.8% to about 1.8% carbon, and the balance essentially nickel, said alloy having a microstructure characterized essentially by the presence of a eutectic structure comprising a nickel-magnesium-carbon compound containing about 12% Mg and 4% carbon in a continuous high nickel phase.

3,843,357
HIGH STRENGTH ALUMINUM ALLOY

Itaru Niimi, Nagoya, Yasuhisa Kaneko, Toyota, Yoshiro Komiyama, Okazaki, and Masaoki Hashimoto, Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Japan

No Drawing. Filed Aug. 29, 1973, Ser. No. 392,480

Claims priority, application Japan, Oct. 31, 1972, 47/109,098

Int. Cl. C22c *21/00*

U.S. Cl. 75—146 **2 Claims**

1. A high strength aluminum casting alloy having a tensile strength of not less than 50 kg./mm.^{2} at room temperatures and an elongation of not less than 1.5%, the alloy consisting esentially of 3.0–6.0% by weight zinc, 2.0–4.0% by weight magnesium, 0.1–0.4% by weight titanium, 0.1–0.4% by weight chromium, 0.02–0.2% by weight lithium, and the balance aluminum and inevitable impurities.

3,843,358
MASTER ALUMINUM COBALT ALLOY

Roger J. Schoerner and Enrique C. Chia, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

No Drawing. Continuation-in-part of abandoned application Ser. No. 54,563, July 13, 1970. This application Dec. 1, 1970, Ser. No. 94,191

Int. Cl. C22c *21/00*

U.S. Cl. 75—147 **3 Claims**

1. An aluminum alloy consisting essentially of about 10% to about 20% by weight cobalt, about 8% to about 16% by weight iron, about 0.5% to about 10% by weight magnesium, and from about 81.5% to about 60% by weight aluminum.

3,843,359
SAND CAST NICKEL-BASE ALLOY
Michael James Fiene, Ballston Lake, N.Y., and Nathan Lewis Church, Mentor, Ohio, assignors to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed Mar. 23, 1973, Ser. No. 344,214
Int. Cl. C22c 19/00
U.S. Cl. 75—171 2 Claims

1. An air melted, sand casting formed of an alloy consisting of 20 to 24% chromium, 7 to 11% molybdenum, 3 to 4.5% columbium, up to 0.1% carbon, up to 0.1% aluminum, up to less than 0.9% silicon, up to 12% iron, up to 0.015% boron, calcium in a small but effective amount up to 0.1% to improve repair weldability, up to 0.5% manganese and 55 to 62% nickel.

3,843,360
SINTERED TANTALUM FOR ELECTRODES OF CAPACITORS
Teruo Hanaoka, Tokyo, Hiro Naito, Yokohama, Akitoshi Komatsu, Shiojiri, Keizi Koyama, Aizuwakamatsu, Mitsuki Kobayashi, Nakano, and Naoaki Ohishi, Kawasaki, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed May 20, 1971, Ser. No. 145,319
Int. Cl. B22f 1/00
U.S. Cl. 75—222 1 Claim

1. In a method of making a tantalum anode comprising (a) compression molding a tantalum power, (b) sintering the resulting molded product under vacuum to form a porous sintered mass, (c) subjecting said porous sintered mass to anodic oxidation to form a dielectric oxide film having a thickness of 400–4,000 A., and (d) filling the pores of the cathode side of said sintered mass with magnesium dioxide, the improvement wherein said tantalum powder has an average particle diameter by the air permeability method F (μ) and a bulk density d (g./cm.^{3}) relationship such that

when $12 \geqq F > 8.4$,	$3.6 \geqq d \geqq 2.8$;
when $8.4 \geqq F > 7.8$,	$3.4 \geqq d \geqq 2.3$;
when $7.8 \geqq F > 7.2$,	$3.2 \geqq d \geqq 1.8$; or
when $7.2 \geqq F > 2$,	$2.8 \geqq d \geqq 1.5$.

3,843,361
ELECTROPHOTOGRAPHY USING INDUCED ELECTROSTATIC IMAGES
Joseph Gaynor, Cleveland, Ohio, assignor to Bell & Howell Co., Chicago, Ill.
Filed Mar. 21, 1973, Ser. No. 343,621
Int. Cl. G03q 13/22
U.S. Cl. 96—1.4 21 Claims

1. An improved electrostatic reproduction process, comprising:
- placing a sheet of insulating transfer material having a bulk resistivity of at least 10^{15} ohm-cm., bearing an electrostatic charge on one side thereof, on a photoconductive surface to form a temporary composite, with said one side in contact with said photoconductive surface, said photoconductive surface being of the n-p type and electrostatically charged to the same polarity as said one side of said transfer sheet, before said transfer sheet is placed thereon, at a potential relative to said transfer sheet insufficient to permit charge transfer therebetween;
- exposing said photoconductive surface with said transfer material in place to a light pattern;
- developing said transfer sheet while said transfer sheet is in place on said photoconductive surface to form a first visible image thereon corresponding to said light pattern;
- transferring said first visible image from said transfer sheet to a receiver sheet; and
- fixing said first visible image on said receiver sheet.

3,843,362
LATENT IMAGE MASK REPAIR
James Joseph Di Fazio and George Joseph Giuffre, Wappingers Falls, and Arthur Frederick Karsch, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 17, 1972, Ser. No. 307,692
Int. Cl. G03c 5/00, 5/09
U.S. Cl. 96—38.3 5 Claims

1. Process for forming an exposure mask comprising the steps of:
- providing a transparent substrate having formed thereon a light sensitive layer of diazo material, having a discernible color;
- exposing said layer patternwise to actinic radiation such that the exposed portion of said layer becomes transparent;
- visually examining said layer with the aid of a microscope, using light which does not act to further expose said diazo material, in order to locate any defect areas which remain colored and which should have been exposed and made transparent by the actinic radiation and were not;
- positioning a shaped aperture between a source of actinic light and said layer such that said defect areas are in the path of said aperture;
- exposing said defect areas to said source of actinic light through said aperture; and
- reacting the remaining unexposed diazo material with a developer to form a patterned diazo dye image on said substrate.

3,843,363
PHOTOGRAPHIC DEVELOPER WITH CUPROUS AMINE COMPLEX
Michael T. Lehman, Hartford, Conn., assignor to Itek Corporation, Lexington, Mass.
No Drawing. Continuation of abandoned application Ser. No. 840,827, July 10, 1969. This application Oct. 25, 1972, Ser. No. 300,630
Int. Cl. G03c 1/58, 5/24, 5/30, 5/32
U.S. Cl. 96—48 R 35 Claims

1. In a process for amplifying a metal image on a photographic medium comprising the steps of contacting said medium with a solution of copper ions and then contacting the medium with a reducing agent for said copper ions, the improvement wherein the solution of copper ions comprises an alkaline solution of cuprous amine complex ions and hydroxylamine and wherein the reducing agent is one capable of reducing said cuprous amine complex ions to metallic copper and is selected from the group consisting of vanadous ion, titanous ion, and complexes of vanadous, titanous or ferrous ion with a complexing organic carboxylic acid having at least two carboxyl groups or a complexing organic carboxylic acid containing at least one amino nitrogen and at least two carboxyl groups where said carboxyl groups are separated from said amino nitrogen by at least one methylene or methine group, said solution having a pH of at least 7.5.

3,843,364
HIGH TEMPERATURE PROCESSING OF PHOTOGRAPHIC ELEMENTS
Raymond Leopold Florens, Edegem, and Hubert Vandenabeele, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium
No Drawing. Filed Nov. 3, 1972, Ser. No. 303,405
Claims priority, application Great Britain, Nov. 8, 1971, 51,801/71
Int. Cl. G03c 5/26, 5/30
U.S. Cl. 96—50 R 8 Claims

1. Method of producing photographic images by development in a process which employs rollers at a temperature above 30° C. of an exposed photographic silver

halide material comprising at least one silver halide emulsion layer wherein the said emulsion layer or a hydrophilic colloid layer in water-permeable relationship therewith comprises a polymeric compound, which is a polymer wherein at least 15 mole percent of the recurring units are of a N-hydroxyalkyl(meth)acrylamide or of a lower alkyl ether thereof, wherein the alkyl groups referred to are C_1–C_5 alkyl groups, whereby the pressure marks on said material are reduced.

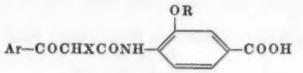
3,843,365

YELLOW FORMING COLOUR COUPLERS FOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Raphael Karel Van Poucke, Berchem, Arthur Henri De Cat, Mortsel, and Gaston Jacob Benoy, Edegem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,184
Claims priority, application Germany, Mar. 25, 1971, P 21 14 576.6
Int. Cl. G03c *7/00, 1/40*
U.S. Cl. 96—55 **9 Claims**

1. Photographic colour material comprising in a light-sensitive silver halide emulsion layer or in a non-light-sensitive water-permeable colloid layer in water-permeable relationship with the light-sensitive silver halide emulsion layer at least one colour coupler corresponding to the formula:



wherein:

Ar stands for phenyl,

X stands for hydrogen, halogen, —S—R′ and —O—R″ wherein R′ is alkyl, aryl, or heterocycle, and R″ is alkyl, aryl, or acyl, and

R stands for a straight-chain or branched-chain alkyl group having from 1 to about 20 C-atoms,

the colour coupler molecular comprising at least one straight-chain or branched-chain alkyl group rendering the molecule fast to diffusion in hydrophilic colloid media.

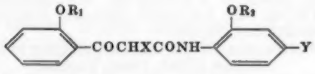
3,843,366

YELLOW FORMING COLOUR COUPLERS FOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Raphael Karel Van Poucke, Berchem, Gaston Jacob Benoy, Edegem, and Arthur Henri De Cat, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,185
Claims priority, application Germany, Mar. 25, 1971, P 21 14 578.8
Int. Cl. G03c *7/00, 1/40*
U.S. Cl. 96—55 **11 Claims**

1. Photographic colour material comprising in a light-sensitive halide emulsion layer or in a non-light-sensitive water-permeable colloid layer in water-permeable relationship with the light-sensitive silver halide emulsion layer at least one colour coupler corresponding to the formula:

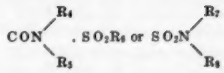


wherein:

X represents hydrogen, halogen, —S—R′ and —O—R″ wherein R′ is alkyl, aryl, or heterocycle, and R″ is alkyl, aryl, or acyl,

R_1 and R_2 represent straight-chain or branched-chain alkyl having from 1 to about 20 C-atoms, and

Y stands for $COOR_3$,



wherein R_3 and R_6 represent a straight-chain or branched-chain alkyl group or an alkoxy alkyl group, and R_4, R_5, R_7 and R_8 represent hydrogen or have the same significance given for R_3 and R_6,

the colour coupler molecule comprising at least one alkyl group rendering the molecule fast to diffusion in hydrophilic colloid media.

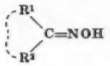
3,843,367

PHOTOGRAPHIC COLOR DEVELOPING PROCESS

Karl-Wilhelm Schranz, Odenthal-Hahnenberg, and Erwin Schon and Wolfgang Hunicke, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 9, 1972, Ser. No. 261,367
Claims priority, application Germany, June 12, 1971, P 21 29 202.4
Int. Cl. G03c *7/00, 5/32*
U.S. Cl. 96—56 **4 Claims**

1. The process for the production of colored photographic images including the steps of imagewise exposing a color photographic material containing at least one silver halide layer, developing the exposed material with color-developer to form the dye-image in the presence of color-couplers and treating the material with a bath that bleaches and fixes the developed material to remove developed silver and residual silver halide, wherein the improvement comprises the bleaching of the developed material is in the presence of a water-soluble oxime in the bath, corresponding to the following formula:



in which

R^1=hydrogen or an aliphatic group with up to 12 carbon atoms and

R^2=an aliphatic group with up to 12 carbon atoms or

R^1 and R^2 together represent the ring members required to complete a saturated carbocyclic or heterocyclic 5- or 6-membered ring,

the amount of oxime being such that it reduces the formation of color fog during bleaching.

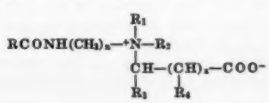
3,843,368

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Nobuo Yamamoto, Masakazu Yoneyama, and Kunioki Ohmura, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

No Drawing. Filed Oct. 5, 1972, Ser. No. 295,326
Claims priority, application Japan, Oct. 8, 1971, 46/79,185
Int. Cl. G03c *1/38*
U.S. Cl. 96—67 **20 Claims**

1. In a process for forming a gelatino-silver halide light-sensitive photographic material comprising at least one photographic layer coated on a photographic support, the improvement which comprises preparing a photographic coating composition containing as a coating aid 0.01 to 50 g./kg. of said coating composition of a compound having the following formula:



in which R is a saturated or unsaturated hydrocarbon group containing from 7 to 21 carbon atoms, inclusive, R_1 and R_2 are members selected from the group consisting of alkyl radicals, hydroxyalkyl radicals, and polyalkyleneoxide chains each containing from 1 to 18 carbon atoms, inclusive, R_3 and R_4 each represents a member selected from the group consisting of hydrogen atom and alkyl radicals containing from 1 to 4 carbon atoms, inclusive, n is an integer of 2 or more, and x is 0 or 1, and applying said photographic coating composition containing said coating aid as a layer on said photographic support, said applied layer being an initially coated layer on said support, a layer on the surface of said support opposite the surface carrying a light-sensitive layer, or as a layer adjacent another photographic layer.

3,843,369

MULTI-LAYER COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Akira Kumai and Toshimasa Usami, Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-shi, Kanagawa, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 29,666, Apr. 17, 1970. This application June 2, 1972, Ser. No. 259,109

Claims priority, application Japan, Apr. 17, 1969, 44/29,835

Int. Cl. G03c *7/00*

U.S. Cl. 96—74 **5 Claims**

1. In a gelatino-silver halide color photographic multilayer light-sensitive material comprising a support having thereon a red-sensitive element, a green-sensitive element and a blue-sensitive element, each of said elements containing a nondiffusing coupler, the improvement characterized in that at least one of said elements is composed of three adjacent gelatino silver halide emulsion layers and further characterized in that

(a) the sensitivity of said uppermost emuslion layer being the highest and that of the lowermost emulsion layer being the lowest,

(b) the maximum optical density of said uppermost emulsion layer and the maximum density of said intermediate emulsion layer being at most 0.60, respectively,

(c) said uppermost emulsion layer, said intermediate emulsion layer, and said lowermost emulsion layer being sensitive to the same spectral region of visible light, and

(d) the sensitivity difference between said uppermost emulsion layer and said intermediate emulsion layer and the sensitivity difference between said intermediate emulsion layer and said lowermost emulsion layer each ranging from about 0.15 to about 0.6 said sensitivity of each of said emulsion layers being indicated by the logarithm of the inertia point thereof.

3,843,370

INSTANT ACCESS ONE-LAYER COLOR PHOTOGRAPHY WITH COLOR SCREEN CONTAINING COLOR COUPLERS

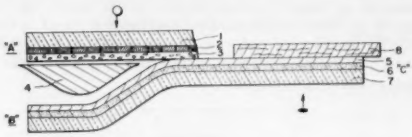
Burton Harvey Waxman and Robert Thomas Shannahan, Endicott, and Felix Viro, Apalachin, N.Y., assignors to GAF Corporation, New York, N.Y.

Original application June 15, 1971, Ser. No. 153,186, now Patent No. 3,728,116. Divided and this application Feb. 26, 1973, Ser. No. 335,641

Int. Cl. G03c *1/40, 1/84*; G03f *5/00*

U.S. Cl. 96—77 **4 Claims**

1. A light sensitive photographic element comprising a transparent film base carrying, in the following order: (1) a panchromatically sensitized silver halide emulsion layer which is in contiguous contact with (2) a multicolor screening layer made of red, green and blue colored oil droplets, each droplet containing non-diffusing dye having one of the primary colors together with a color former fast to diffusion which becomes diffusing at a pH of at least 12.5, and is capable of forming upon



coupling with the oxidation product of a paraphenylenediamine color developer, a dye complementary in color to the primary color of the oil droplet.

3,843,371

PHOTOGRAPHIC MATERIAL STABILISED AGAINST THE DELETERIOUS EFFECTS OF ULTRAVIOLET RADIATION

Bernhard Piller, Marly, Max Meier, Fribourg, Max Dunnenberger, Frenkendorf, Hans Rudolf Biland, Gelterkinden, and Christian Luthi, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

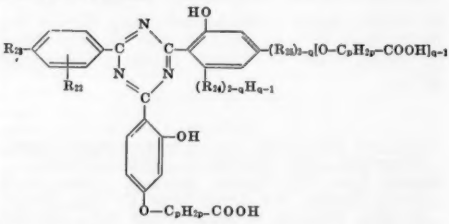
No Drawing. Continuation-in-part of application Ser. No. 293,700, Sept. 29, 1972, which is a continuation of application Ser. No. 126,969, Mar. 22, 1971, both now abandoned. This application Mar. 14, 1973, Ser. No. 341,222

Claims priority, application Switzerland, Mar. 23, 1970, 4,336/70

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **3 Claims**

1. Silver halide photographic material or processed material obtained therefrom which comprises, in at least one layer on a support, as a stabiliser against the deleterious effects of ultraviolet radiation, a 2'-hydroxy-2,4,6-triphenyl-1,3,5-triazine free from sulphonic acid groups and having the formula



where p is an integer between 1 and 10, q is 1 or 2, R_{22} and R_{23} are each a hydrogen or chlorine atom or an alkyl group with 1 to 4 carbon atoms, and R_{24} and R_{25} are each a hydrogen atom or an alkyl group with 1 to 4 carbon atoms.

3,843,372

GELATINO SILVER HALIDE EMULSION LAYER CONTAINING A HALOGEN SUBSTITUTED HETEROCYCLIC NITROGEN COMPOUND, AS HARDENER AND A CYSTEINE, METHIONINE OR CYSTEINE AS LATENT IMAGE REGRESSION INHIBITING AGENT

Robin Jefferson, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Mar. 29, 1973, Ser. No. 346,948

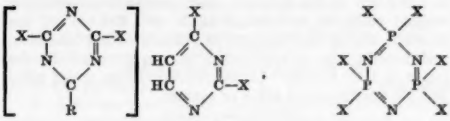
Claims priority, application Great Britain, Apr. 5, 1972, 15,615/72, 15,616/72

Int. Cl. G03c *1/06, 1/30, 1/34*

U.S. Cl. 96—109 **8 Claims**

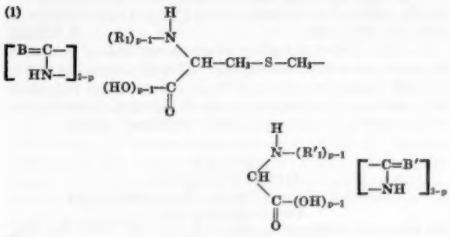
1. A hardened silver halide emulsion layer which comprises silver halide, a gelatin binder and a hardener

selected from the group consisting of compounds of the formula



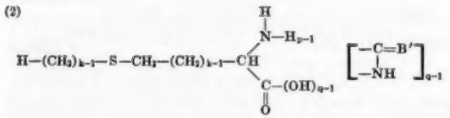
or a dichloro or dibromo substituted triazene wherein *X* represents a chlorine or bromine atom and a latent image regression inhibiting compound of the formula

(1)



or

(2)



wherein R_1 and R'_1, independently from one another, represent a hydrogen atom, an alkyl group, a hydroxymethyl group, an aralkyl, a hydroxymethyl benzyl group, an allyl group, an alkyl-oxy-carbonyl group, an aralkyl-oxy-carbonyl group or an acyl group of the formula R_2—CO— where R_2 is an alkyl or trifluoromethyl group, an aralkyl or hydroxymethyl benzyl group or an aryl or p-chlorophenyl group, B and B′ represent an oxygen or sulphur atom and *p*, *q* and *k* each is 1 or 2, or a water-soluble salt of a sulphur compound of formula (1) or (2) the sulphur compound being present in an amount ranging from 0.01 to 2.5 millimoles per mole of silver halide present in the emulsion.

3,843,373

BATH FOR THE ELECTROLESS DEPOSITION OF DUCTILE COPPER

Arian Molenaar, Jan Boven, and Johannes Engelbertus Adrianus Maria van den Meerakker, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Sept. 26, 1973, Ser. No. 400,880

Claims priority, application Netherlands, Oct. 5, 1972, 7213464

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **2 Claims**

1. An alkaline aqueous copper-plating bath for the deposition of ductile copper comprising as essential constituents:

0.01–0.15 mol of a copper salt soluble in water,
0.01–0.80 mol of a compound forming complexes with cupric ions,
0.01–0.35 mol of formaldehyde or a compound producing formaledhyde,
0.05–0.50 mol of alkali hydroxide (pH ~11–13.5), and a thioether of a polyalkylene glycol, characterized in that the thioether is defined by the following formula:

$$R_1—S(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_c—R_2,$$

in which R_1 is an aliphatic or cyclic group and R_2 is H, a sulphate group, a phosphate group or an acid chloride thereof, $(a+b+c)$ has a value of between 20 and 500 and the thioether of polyalkylene glycol is present in a quantity of between 0.001 and 0.5% by weight.

3,843,374

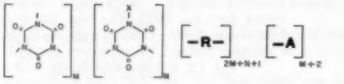
GELS FOR PROTECTING METAL STRUCTURES

Soma Kurtis, Denver, Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

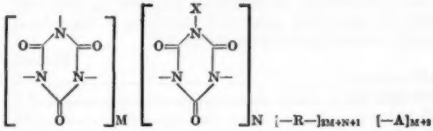
Filed June 8, 1972, Ser. No. 260,843

Int. Cl. C09d *5/08*

U.S. Cl. 106—14 **8 Claims**



1. A process for protecting metallic objects from corrosion comprising introducing between the surface of said metallic objects and the source of said corrosion, a gel composition substantially insoluble in water prepared by contacting, at a pH 7, a gel formed by reacting about 1.0 to about 10% by weight of polyvinyl alcohol or a precursor thereof at a pH above 7 with from about 0.5 to about 50% by weight of a salt of a polymeric isocyanuric acid, wherein said salt of a polymeric isocyanuric acid has the chemical structure:



wherein:

R=divalent hydrocarbon or substituted hydrocarbon radical, containing 2 to about 40 carbon atoms,
X is selected from the group consisting of Group I metals, Group II metals, hydrogen, and quaternary ammonium radicals,
A is a monovalent organic radical selected from the group consisting of —NCO, —$NHCO_2$ R′, —NHCO NHR′ —NH_2 —NHR′, —NR'_2, and R′, wherein
R′ is a monovalent hydrocarbon radical or substituted hydrocarbon radical containing from 1 to about 40 carbon atoms, wherein
M is the average number of trisubstituted isocyanurate rings per molecule and is a positive number from zero to about 400,
N is the average number of isocyanurate acid and/or is isocyanurate salt groups and is a positive number from above 1 to about 10,000, wherein
2M+N+1=the average number of divalent R groups and is a positive integer from 2 to about 11,0000, and wherein
M+2 is the average number of A groups and is a positive integer from 2 to about 2,000, and wherein there are no N-to-N bonds and no A-to-N bonds, and no A-to-A bonds and no R-to-R bonds.

3,843,375
CERAMIC COMPOSITIONS AND PROCESS OF MAKING SAME

Yorihiro Murata, North Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Continuation of application Ser. No. 241,520, Apr. 6, 1972, which is a continuation of application Ser. No. 27,117, Apr. 9, 1970, both now abandoned. This application Oct. 15, 1973, Ser. No. 406,742

Int. Cl. C04b *35/70, 35/56*

U.S. Cl. 106—43 **4 Claims**

1. A composition of matter made by hot pressing at a temperature in the range from about 1800° C. to about 2250° C. and at a pressure of at least about 70 kg./cm.^{2}, an intimate mixture consisting essentially of, by weight, about 48% TaN, 32% ZrB_2 and 20% of an additive selected from the group consisting of ZrN and WC.

3,843,376
METHOD OF MANUFACTURING A MIXTURE FOR A BOROSILICATE GLASS

Johannes Cornelissen and Robertus Antonius Marie Vreeburg, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,145

Claims priority, application Netherlands, Apr. 24, 1971, 7105593; Dec. 17, 1971, 7117323

Int. Cl. C03c *3/04, 3/08*

U.S. Cl. 106—54 **2 Claims**

1. In a method of manufacturing a glass mixture comprising the use of a pulverulent mixture of quartz powder and other glass-forming components for the manufacture of a glass which satisfies the following conditions expressed in percent by weight:

SiO_2	30-80	R_2O <13 (K_2O, Na_2O and/or Li_2O)
B_2O_3	1-30	$B_2O_3 + Al_2O_3 > 6$ Refining agent
Al_2O_3	0-40	preferably >10 RO Remainder (MgO, CaO, SrO and/or BaO)

the improvement wherein quartz powder is used having a selected particle size at least 90% of which is between 30 and 120 microns to accelerate the melting step, said quartz particles being graduated according to the following approximate grain size distribution:

	Percent
>160 microns	0.2
>100 microns	1.5
>63 microns	38
>45 microns	75
>32 microns	91

ERRATUM

For Class 106—56 see:
Patent No. 3,842,760

3,843,377
ART OF MANUFACTURING MODIFIED AMYLACEOUS MATERIALS WITH CONDENSED PHOSPHATES AND UREA

Richard J. Alexander, Wauwatosa, Wis., assignor to Krause Milling Company, Milwaukee, Wis.

No Drawing. Continuation-in-part of abandoned application Ser. No. 261,644, June 12, 1972. This application May 29, 1973, Ser. No. 364,770

Int. Cl. C08b *1/00*

U.S. Cl. 106—157 **8 Claims**

1. A method of manufacturing a phosphated amylaceous product of improved rheological properties comprising blending an amylaceous material with an aqueous solution of condensed phosphate and with a nitrogen-containing reagent selected from the group comprising urea, formamide, dimethylformamide, thiourea, tetramethylurea and cyanamide, said amylaceous material being selected from the group comprising corn, waxy corn, wheat, sorghum, and waxy sorghum starch and flour, said flour containing both protein molecules and starch molecules, the condensed phosphate being in an amount equal to 1.0–6.0% of the mixture, and the nitrogen-containing reagent being in an amount equal to 1.0–6.0% of the mixture, drying the mixture to remove excess moisture, and heating the mixture to a temperature within the range of 100° C.–160° C., the reaction being under alkaline pH conditions of pH 8 or greater.

3,843,378
REGENERATED CELLULOSE-POLYETHYLENE GLYCOL HIGH FLUID-HOLDING FIBER MASS

Frederick R. Smith, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Oct. 16, 1972, Ser. No. 298,029

Int. Cl. A61f *13/20;* **C08b** *23/00;* **C08g** *43/02;* **D01f** *3/14*

U.S. Cl. 106—168 **7 Claims**

1. Fluid absorbent alloy fibers comprised of a matrix of regenerated cellulose having uniformly dispersed therein from about 5 to about 25%, based upon the weight of the cellulose, polyethylene glycol having a molecular weight within the range of from 10,000 to 40,000.

3,843,379
GOLD POWDER

Valdis R. Daiga, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Original application Mar. 15, 1971, Ser. No. 124,558, now Patent No. 3,768,994. Divided and this application Nov. 21, 1972, Ser. No. 308,526

Int. Cl. C09c *1/00, 4/62;* **C09d** *5/10;* **C09k**

U.S. Cl. 106—290 **6 Claims**

1. A printing paste useful for printing a microelectronic conductor comprising a glass binder, a liquid organic vehicle and gold powder particles coated with an emulsifying agent which prevents coalescence and cold-welding of the gold powder particles in said paste and is capable of being burned off during the conventional firing of the paste to thick film form, said particles having a bulk density greater than 5 grams per cubic centimeter and an average particle size of less than about 20 microns.

3,843,380
PROCESS FOR SPRAY DRYING PIGMENT

Edgar Joachim Beyn, Annapolis, Md., assignor to SCM Corporation, Cleveland, Ohio

Filed Dec. 26, 1972, Ser. No. 318,481

Int. Cl. C09c *1/04, 1/36*

U.S. Cl. 106—300 **19 Claims**

1. In a process for treating mineral pigment, to produce a free flowing and substantially dustless mineral pigment aggregate which is readily dispersible in a paint or plastic, the improvement comprising:

forming a pumpable slurry of primary pigment particles with water and about 0.1 to about 5.0%, based on pigment particle weight, of a water-soluble or water-dispersible organic, colloidal high molecular weight thickener capable in small concentrations of less than about 5.0% of visibly causing thickening when added to water;

atomizing the resulting slurry;

spray drying the atomized slurry, said atomization and spray drying forming a plurality of minute, discrete aggregates of primary pigment particles bound together; and

recovering the minute, discrete pigment aggregates from the spray drying operation, said thickener being normally a solid at room temperature, non-degradable and non-volatile at spray drying temperatures and capable on hardening of creating sufficiently strong aggregate bonds to withstand normal handling and storage without destruction,

said bonds, however, being readily destructible in the paint or plastic system to which the pigment aggregates are added.

3,843,381

TRANSFER PROCESS IN ELECTROGRAPHY

Shoji Matsumoto, Neyagawa, Noboru Yonaha, Hirakata, and Tatsuo Aizawa, Osaka, Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Dec. 28, 1971, Ser. No. 213,023
Claims priority, application Japan, Dec. 29, 1970, 46/121,545
Int. Cl. G03g *13/08, 13/10*
U.S. Cl. 117—17.5 9 Claims

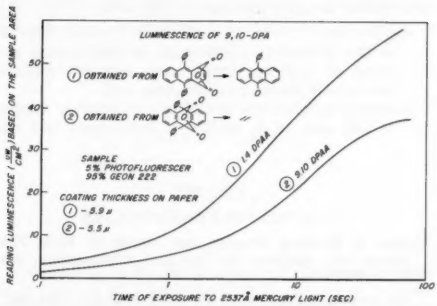
1. A transfer process for producing a plurality of copies from a single electrostatic latent image formed on the surface of a supporting member comprising the steps of developing the latent image with toner having the same polarity charge as the latent image; transferring the developed toner image from the supporting member to a transfer sheet without substantially dissipating the electrostatic latent image by pressure-contacting the surface of the supporting member and the transfer sheet with a pressure within the range of from 0.1 to 0.3 kg./cm.^{2} utilizing an electrically conductive roller, the transfer sheet having an electrostatic capacity not greater than the electrostatic capacity of the supporting member and having a volume resistivity within the range of from 10^8 to 10^{14} Ω·cm., the electrically conductive roller and the rear surface of the supporting member having substantially equal potentials, and repeating said developing and transferring steps to produce a plurality of copies from the single electrostatic latent image.

3,843,382

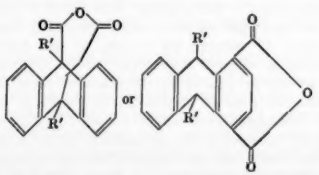
INFORMATION PROCESSING ARTICLE UTILIZING PHOTODECOMPOSABLE DIHYDROAROMATIC AND SIMILAR ANHYDRIDES

Arnold Zweig, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Application Aug. 8, 1969, Ser. No. 848,577, which is a continuation-in-part of application Ser. No. 764,311, Oct. 1, 1968. Divided and this application Jan. 28, 1972, Ser. No. 221,841
Int. Cl. C09k *1/02*
U.S. Cl. 117—33.5 T 5 Claims



1. A substrate incorporating an aromatic anhydride compound of the formula:



where substituents R' may be phenyl, p-anisyl, p-cyanophenyl, phenylethynyl, p-phenylphenyl, 1-naphthyl; a benzo-substituent may be present at 1–2, 2–3, 5–6, 6–7 or 7–8; and methyl or methoxy substituents may be present at 1, 2, 7 or 8 positions.

3,843,383

RECORDING SHEET EMPLOYING AN AROMATIC CARBOXYLIC ACID

Sadao Ishige, Kanagawa, and Takao Hayashi and Hajime Kato, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,925
Claims priority, application Japan, Oct. 28, 1971, 46/85,834
Int. Cl. B41m *5/00*
U.S. Cl. 117—36.8 12 Claims

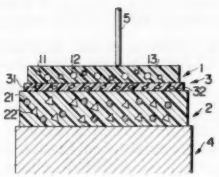
1. A recording sheet comprising a support having thereon a layer of color developer capable of reacting with a substantially colorless color to form a colored image wherein said color developer consists essentially of at least one clay and at least one aromatic carboxylic acid or an alkali metal salt thereof.

3,843,384

HEAT-SENSITIVE TWO COLOR RECORDING PAPER

Kinichi Adachi, Takarazuka, and Takeshi Takaoka, Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 12, 1972, Ser. No. 261,969
Claims priority, application Japan, June 14, 1971, 46/42,341; Aug. 5, 1971, 46/59,395; Aug. 10, 1971, 46/60,752; Aug. 20, 1971, 46/63,815
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.9 13 Claims



1. A heat-sensitive two color recording paper which has a layer of a first heat-sensitive recording material prepared by dispersing, as discontinuous particles into a film-forming binder, a triphenylmethane or fluoran type non-colored dye base having in the molecule a reactive color-developing component of the lactone or lactam type, and a phenolic substance or an organic acid, said layer developing a color at the time of application of heat, by formation of a color-developing substance, and a layer of a second heat-sensitive recording material capable of developing at the time of application of heat a color different from the color of the aforesaid first layer, and which contains as a decolorizing agent for the color-developing substance contained in the first layer a thermofusible polyether which is substantially solid at normal temperature.

3,843,385

DECORATIVE CUSHIONING STRIP AND METHOD FOR PRODUCING SAME

Raymond F. Schultz, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,209
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A 7 Claims

1. In the method of preparing an object having an elastomeric surface for adherence of a coating thereon, the steps of producing the object with a surface containing

an EPDM elastomeric material having at least 2 carbon to carbon double bonds per 1000 carbon atoms, exposing the surface to be coated to reactive conditions through the unsaturated groups, to ozone for at least 5 seconds, and coating the exposed surface with an organo silicon compound in the form of a silane, its hydrolysis product or its polymerization product in which the silane has from 1 to 3 highly hydrolyzable groups and at least one organic group attached to the silicon atom containing a mercapto group.

3,843,386

COATING OF GLASS FABRIC COATED WITH AQUEOUS DISPERSION OF POLYMER

Robert Clark Ribbans III, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 217,846, Jan. 12, 1972, now Patent No. 3,790,403. This application Dec. 27, 1972, Ser. No. 318,901

Int. Cl. B44d *1/20;* **C03c** *15/00, 17/00, 19/00*
U.S. Cl. 117—54 **3 Claims**

1. In the process for coating glass textile fabric with a medium comprising an aqueous dispersion of polytetrafluoroethylene by passing said fabric through said medium, the improvement comprising prior to said passing, flooding one surface of said fabric with said medium to obtain wicking of said medium through the thickness of said fabric prior to said passing.

3,843,387

PROCESS FOR COATING A SUPPORT WITH A POLYAMIDE PLASTIC MATERIAL

Michel S. Lefebvre, 39 Rue du Cardinal Saliege, 02-Saint-Quentin, aisne, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 15,946, Mar. 2, 1970. This application Aug. 28, 1972, Ser. No. 284,100

Claims priority, application France, Mar. 12, 1969, 6907008

Int. Cl. B44d *1/44;* **B44c** *1/04*
U.S. Cl. 117—62.2 **3 Claims**

1. A process for coating a support with a polyamide plastic material, comprising coating the support with an ionic acid polyamide solution in the form of a paste and then coagulating the coating by spreading on the coated support a pulverized salt chosen from the group consisting of mono-ammonium phosphate, di-ammonium phosphate, mono-sodium phosphate, di-sodium phosphate and tri-sodium phosphate.

3,843,388

PROCESS FOR CLEANING SOILED HYDROPHOBIC POLYAMIDE AND POLYESTER FABRICS

Vincent Paul Heuring, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 885,360, Dec. 15, 1969. This application Aug. 11, 1972, Ser. No. 280,009

Int. Cl. B44d *1/02*
U.S. Cl. 117—66 **4 Claims**

1. A process of cleaning soiled hydrophobic polyamide or polyester substrates and simultaneously imparting a soil repellent and anti-static finish thereto comprising treating said substrates with a solution of a polymeric anhydride selected from the group consisting of poly(vinyl methyl ether/maleic anhydride), poly(maleic anhydride) and poly(ethylene/maleic anhydride) in a substantially water-free, non-aqueous, solvent, said solvent being free of active hydrogen atoms and drying the treated substrates.

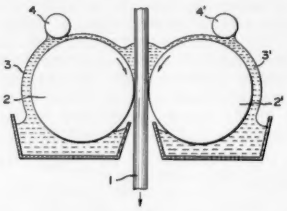
3,843,389

PROCESS FOR IMPREGNATING WEBS WITH POLYMER SOLUTIONS

Yuya Enomoto, Kurashiki, Japan, assignor to Kurashiki Rayon Co., Ltd., Kurashiki, Japan

Continuation of application Ser. No. 847,359, Aug. 4, 1969, which is a continuation-in-part of application Ser. No. 539,843, Apr. 4, 1966, both now abandoned. This application Mar. 8, 1972, Ser. No. 232,982

Int. Cl. B05c *9/04;* **B44d** *1/02*
U.S. Cl. 117—68 **2 Claims**



1. A process for the uniform impregnation of a fibrous mat with a polymer solution comprising the steps of

passing a fibrous mat having a surface through a succession of substantially identical gaps each defined between pairs of rollers,

coating said rollers uniformly and constantly with said polymer solution, the gaps between said rollers being such that said fibrous mat is not subjected to compression therebetween by the rollers per se,

maintaining the clearance of said gaps equal to or greater than the thickness of said mat,

driving each of said coated rollers in the same direction as the advancing direction of the fibrous mat at a speed at least two times faster than the speed at which said fibrous mat advances, and

transporting a uniform stream of said polymer solution to said mat on its surface to impregnate said mat.

3,843,390

COATED POLYCARBONATES

George A. Hudson, Venetia, and Joseph M. Rich, Pittsburgh, Pa., assignors to Baychem Corporation, New York, N.Y.

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,605

Int. Cl. B32b *27/14*
U.S. Cl. 117—138.8 F **5 Claims**

1. Coated polycarbonate having as a surface layer a coating containing (1) from about 5 to about 62 percent by weight of the coating of a linear diol, (2) from about 8 to about 35 percent by weight of the coating of a thermosetting acrylic containing about 10 percent by weight of the acrylic of an unsaturated carboxylic acid, from about 4 to about 10 percent by weight of the acrylic of any hydroxyalkyl ester of an alpha,beta-unsaturated carboxylic acid with the remainder comprising at least one alkyl ester of an alpha,beta-ethylenically unsaturated carboxylic acid and (3) from about 17 to about 87 percent by weight of the coating of a crosslinking agent.

3,843,391
PROCESS FOR FINISHING TEXTILES

Rosemarie Toepfl, Dornach, Solothurn, Heinz Abel, Reinach, Basel-Land, and Arthur Maeder, Therwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Nov. 3, 1970, Ser. No. 86,640, now abandoned. Divided and this application May 1, 1972, Ser. No. 249,014

Claims priority, application Switzerland, Nov. 10, 1969, 16,655/69

Int. Cl. D06m *3/02;* **C09d** *3/58*

U.S. Cl. 117—141 **16 Claims**

1. A process for finishing woolen material, which comprises treating the woolen material at 30 to 100° C. with an aqueous preparation of reaction products of epoxides, polymeric fatty acids and amines, said products being obtained by reacting (a) a reaction product of at least (a') one epoxide which contains at least two epoxide groups per molecule and at least (a'') one polymeric unsaturated fatty acid, derived from a fatty acid of 16 to 22 carbon atoms, with the ratio of equivalents of epoxide groups to acid groups being 0.45:1 to 0.95:1, with (b) ammonia or an aliphatic or cycloaliphatic amine which is a primary, secondary or tertiary amine containing no non-basic nitrogen atoms, in the presence of an organic solvent, with the ratio of equivalents of acid groups to hydrogen bonded amine nitrogen, to tertiary amino groups or to ammonia being 1:1 to 1:10, wherein the reaction between components (a) and (b) is carried out at a temperature in the range of 20 to 120° C., and then rinsing and drying the treated woolen material.

3,843,392
GLASS DEPOSITION

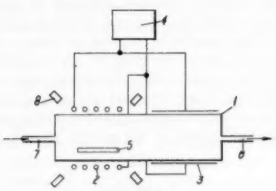
Henley Frank Sterling, Great Dunmow, and John Henry Alexander, Bishop's Stortford, England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,191

Claims priority, application Great Britain, Oct. 28, 1971, 50,082/71

Int. Cl. C03c *3/12;* **C23c** *11/00*

U.S. Cl. 117—93.1 GD **10 Claims**



1. A method of depositing a layer of chalcogenide glass on the surface of a substrate from a mixture of gaseous compounds, each of said compounds containing at least one of the chemical elements of said glass comprising the steps of:

(a) introducing a predetermined mixture of said gaseous compounds into a partially evacuated electrodeless discharge reaction chamber having an inlet and outlet;

(b) positioning a substrate material within said reaction chamber intermediate said inlet and said outlet;

(c) exciting an electrodeless glow discharge proximate said substrate whereby said mixture of gaseous compounds becomes energized within said electrodeless discharge and dissociated into the chemical elements of said glass;

(d) directing said chemical elements onto said substrate by magnetic means; and

(e) removing gaseous byproducts from the dissociation of said gaseous compounds from the reaction chamber by means of the outlet.

3,843,393
PROCESS FOR COATING TABLETS AND MAKING DRAGEES

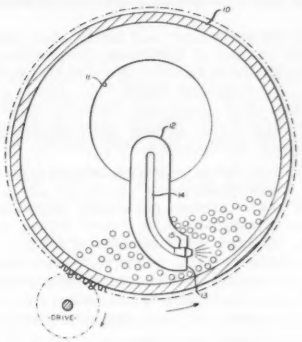
Gregor Groppenbacher, Heddesheim, Peter Rieckmann, Mannheim-Waldhof, Werner Rothe, Hockenheim, Heinz Schalk, Mannheim, and Jurgen Schellhorn, Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation-in-part of abandoned application Ser. No. 152,797, June 14, 1971. This application Sept. 13, 1972, Ser. No. 288,858

Claims priority, application Germany, June 18, 1970, P 20 29 839.9; Nov. 30, 1971, P 21 59 241.6

Int. Cl. B44d *1/02*

U.S. Cl. 117—100 A **10 Claims**



1. In the process of coating tablet cores or the like with a coating comprising placing said cores in a container, rotating said container to move said cores about, supplying a suspension or solution of coating material to said container to coat said cores and supplying a drying gas to said container to dry the coating on said cores, the improvement which comprises introducing said drying gas into the body of moving tablet cores below the level thereof in such manner that a substantially tablet-free gas space is formed just beyond the point of discharge of said gas, said gas being directed in the main direction of movement of the tablet cores, spraying of said coating material into said gas space taking place in a direction substantially parallel to the direction of discharge of said gas.

3,843,394
PHOTOSENSITIVE MEMBER

Hirohiko Katayama, Tokyo, Hiroshi Hanada, Yokohama, and Masanao Kasai, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1972, Ser. No. 294,797

Claims priority, application Japan, Oct. 11, 1971, 46/80,010; May 11, 1972, 47/46,638

Int. Cl. C23c *11/00, 13/00*

U.S. Cl. 117—106 A **14 Claims**

1. A process for producing a photosensitive member having an amorphous chalcogen glass layer deposited on a support layer with a minimum strength of adhesion equal to 10 kg./cm.², said chalcogen glass cointaining 5–40 atomic percent of a first component selected from the group consisting of Ge, Si, and mixtures thereof and 60–95 atomic percent of a second component selected from the group consisting of S, Se, As-S, As-Te, As-Se,

Se-S, Se-Te, Sb-Se, Sb-Te, Bi-Se, Bi-S, Bi-Te, As-S-Te, As-Se-Te, Sb-As-S, As-S-Se, and As-S-Se-Te and mixtures thereof, comprising vapor-depositing said chalcogen glass onto said support layer and simultaneously maintaining said support layer at a maximum temperature ranging from 200° C. to 450° C. for a period of time ranging from 1/10–7/10 of the total vapor deposition time.

3,843,395

PROCESS FOR SOFTENING FABRICS IN A DRYER

David Russell Morton, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Dec. 30, 1968, Ser. No. 788,102, now Patent No. 3,686,025. Divided and this application Aug. 21, 1972, Ser. No. 282,214

Int. Cl. B05c *3/08*

U.S. Cl. 117—109 **10 Claims**

1. A process for softening freshly washed fabrics in an automatic rotary drum clothes dryer comprising the steps of

(A) adding to the dryer said fabrics and a premeasured length or sheet of a softening composition consisting essentially of a fabric softener impregnated into an absorbent substrate having an absorbent capacity of from 5.5 to 12; wherein

(i) said fabric softener has a softening point of from 100° F. to 170° F.;

(ii) said fabric softener is selected from the group consisting of

(a) cationic quaternary ammonium compounds;

(b) cationic imidazolinium salts;

(c) nonionic compounds selected from the group consisting of tertiary phosphine oxides, tertiary amine oxides, ethoxylated aliphatic alcohols and ethoxylated alkylphenols;

(d) anionic compounds selected from the group consisting of fatty acid soaps, alkyl sulfates, ethoxylated alcohol sulfates, alkyl sulfonates, alkylbenzene sulfonates and alkyl glyceryl ether sulfonates;

(e) zwitterionic quaternary ammonium compounds;

(f) amphoteric quaternary ammonium compounds; and

(g) mixtures of such fabric softeners; and

(iii) the weight ratio of fabric softener to the dry substrate ranges from 10:1 to 2:1; and

(B) operating said clothes dryer with a drying temperature ranging from about 75° F. to about 170° F., thereby causing the fabric softener in said composition to liquify, whereby the action of the clothes dryer provides maximum and frequent contact of the fabrics with the liquified softener to effect softening of the fabrics.

3,843,396

PROCESS FOR THE FINISHING OF TEXTILES

Volkmar Mueller, Arlesheim, and Rosemarie Toepfl, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 86,602, Nov. 3, 1970. This application Sept. 11, 1972, Ser. No. 287,953

Claims priority, application Switzerland, Nov. 10, 1969, 16,658/69

Int. Cl. D06m *3/02*

U.S. Cl. 117—141 **11 Claims**

1. A substantially anhydrous process for rendering woolen textiles non-felting which comprises

(a) forming the reaction product of

(i) a basic polyamide with

(a′) an epoxide, the equivalent ratio of epoxide to polyamide being from 1:1 to 1:5 or

(b′) an alkyl ether of an aminoplast precondensate, the equivalent ratio of aminoplast precondensate to basic polyamide being from 1:0.11 to 1:1.45 or

(c′) an epoxide-polymeric unsaturated fatty acid reaction product, the equivalent ratio of epoxide to polyamide being from 1:1 to 1:5 or

(ii) an epoxide-organic carboxylic acid reaction product, wherein the epoxide is normally liquid at room temperature and is derived from a polyhydric phenol, a polyphenol or a bisphenol, with

(a″) an amine or

(b″) an amino-epoxide reaction product

(b) mixing said reaction product with a water-insoluble organic solvent and a surface-active dispersing agent, the resulting mixture containing from 0.5 to 5% by weight of said reaction product based on the textile to be treated

(c) impregnating the textile with said mixture and thereafter drying the treated textile and heating at 40 to 200° C. to fix the coating.

3,843,397

HYDROPHOBIC SUBSTRATES RENDERED HYDROPHILIC BY COATING

Melvin M. Olson, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application Jan. 17, 1972, Ser. No. 218,581, now Patent No. 3,740,414, which is a division of application Ser. No. 43,970, June 5, 1970, now Patent No. 3,661,814, which is a continuation-in-part of application Ser. No. 871,529, Nov. 6, 1969, which in turn is a continuation of application Ser. No. 469,902, July 6, 1965, both now abandoned. Divided and this application Jan. 19, 1973, Ser. No. 324,960

Int. Cl. C08d *5/02;* **C09j** *3/00, 3/12*

U.S. Cl. 117—161 UD **7 Claims**

1. A normally hydrophobic substrate which has been rendered hydrophilic by application thereover of a thin coating of a water-soluble composition comprising a water-soluble rubbery polymer, alkaline in aqueous solution, consisting essentially of the reaction product of an epoxidized water-insoluble neutral rubbery polymer selected from the class consisting of cis-1,4-polybutadiene, butadiene:styrene copolymer, butadiene:acrylonitrile copolymer and cis-1,4-polyisoprene and a water-soluble secondary mono amine, said epoxidized rubbery polymer having an epoxy equivalent of not greater than about 225.

3,843,398

CATALYTIC PROCESS FOR DEPOSITING NITRIDE FILMS

Ronald R. Maagdenberg, P.O. Box 1337, Sunnyvale, Calif. 94088

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,900, June 25, 1970. This application June 13, 1972, Ser. No. 262,349

Int. Cl. B44d *1/18;* **C23c** *11/00*

U.S. Cl. 117—201 **12 Claims**

1. In semiconductor device fabrication a method for producing nitride films of a given semiconductor material, comprising the steps of:

(a) providing a compound containing a given semiconductor material of silicon or germanium;

(b) providing nitrogen gas;

(c) providing an oxygen gas catalyst, the mole ratio of the catalyst to said compound being less than 1;

(d) providing a semi-conductive substrate;

(e) simultaneously reacting the compound containing the given semiconductor material with the nitrogen gas in the presence of the catalyst to form nitride; and

(f) depositing said nitride on the substrate to form a nitride of said semiconductor material on said substrate.

3,843,399

METALLIZED VIDEO DISC HAVING AN INSULATING LAYER THEREON

Michael Kaplan and Dennis Lee Matthies, Princeton, N.J., assignors to RCA Corporation

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,664
Int. Cl. G11b *5/00*
U.S. Cl. 117—217 **3 Claims**

1. An information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising:

(a) a disc having a spiral groove in a surface thereof, said groove being dimensioned for reception therein of said stylus and containing an information track constituted by geometric variations in the bottom of said groove,

(b) a continuous conductive metal layer on said surface, said layer being of substantially uniform thickness, and

(c) a thin dielectric coating of uniform thickness overlying said metal layer, said dielectric coating being a polystyrene applied in a glow discharge, and the combined thickness of said conductive layer and said dielectric coating do not fill said groove, allowing for reception of said stylus within said groove during playback.

3,843,400

SOLID ELECTROLYTE CELL

Kenneth C. Radford, Pittsburgh, and Raymond J. Bratton, Delmont, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1972, Ser. No. 290,046
Int. Cl. C23c
U.S. Cl. 117—227 **19 Claims**

1. A method of making a solid electrolyte cell comprising:

(A) preparing a sheet of an electrolyte composition comprising a finely-divided, solid, sinterable electrolyte having ionic vacancies capable of conducting a carrier, and a first synthetic, organic resin which does not leave a residue when thermally degraded;

(B) covering said sheet with an electrode composition comprising a finely-divided, solid electrode inert to said carrier which is sinterable at a temperature at which said electrolyte is sinterable, a second, synthetic, organic resin which does not leave a residue when thermally degraded, and a solvent for said second, synthetic, organic resin;

(C) evaporating said solvent;

(D) thermally degrading said first and second, synthetic, organic resins; and

(E) in a single operation sintering said electrolyte and said electrode.

3,843,401

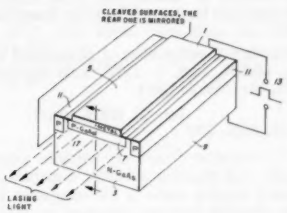
BISMUTH MASKING TECHNIQUE FOR USE ON INJECTION LASER DIODES AS MEANS OF UNIFORMITY EVALUATION AND SPONTANEOUS CONTROL AND PRODUCT

Ronald L. Carroll, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 14, 1972, Ser. No. 271,870
Int. Cl. B44c *1/20;* **B44d** *1/18*
U.S. Cl. 117—227 **8 Claims**

1. A method of masking the lasing region of an injection laser diode which comprises the step of:

(a) coating the lasing surface of said diode with a material of sufficiently low electrical conductivity not to affect the diode properties of said diode and evaporable at power levels of said diode which do not degrade said diode; and



(b) pulsing said diode at an energy level sufficiently high to evaporate said material, whereby said material evaporates along the lasing region of said diode.

3,843,402

STABILIZED IRRADIATION CROSS-LINKED PVC COATED ARTICLES

Robert Vincent Albarino, New York, N.Y., and Edward Paul Otocka, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1971, Ser. No. 205,495
Int. Cl. B44d *1/42;* **H01b** *3/44*
U.S. Cl. 117—232 **6 Claims**

1. Article coated with a polymeric material consisting essentially of at least 80 percent by weight of polyvinyl chloride, said material being irradiation cross-linked through a cross-linking medium at least 50 percent by weight of which is a difunctional monomer, characterized in that said material contains from 1 to 20 parts by weight based on 100 parts of said polymeric material of at least one cyclic ether containing at least one hydrogen substituent atom in a position alpha to an ether oxygen, said ether containing at least one additional carbonaceous substituent of a molecular weight of at least 50, such ether including at least one compound selected from the group consisting of five and six-membered monoethers and diethers, ring members of which are restricted to carbon and ether oxygen atoms.

3,843,403

METHODS OF MANUFACTURING FERROMAGNETIC CARBON MODIFIED CHROMIUM OXIDE AND COMPOSITIONS AND RECORDING MEDIA CONTAINING SAME

Robert S. Haines, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,627
The portion of the term of the patent subsequent to Aug. 17, 1988, has been disclaimed
Int. Cl. C01g *37/02*
U.S. Cl. 117—235 **19 Claims**

1. A process for producing ferromagnetic carbon modified chromium oxide compositions of tetragonal crystal structure containing about 58.5% to 62%, by weight, of chromium, and about 0.05% to 0.90%, by weight, of carbon which comprises:

forming a chromium modified carbon by mixing a modifying chromium salt with carbon in its elemental form, said chromium salt selected from those chromium compounds capable of being absorbed or adsorbed by said carbon, and excluding the oxides and hydroxides of chromium lacking additional elements;

mixing the modified carbon thus formed with chromium trioxide to form a reaction mixture; and

then heating the mixture at a temperature within the range of about 450° F. to 850° F. and under a pressure of at least 730 p.s.i.

3,843,404

MAGNETIC RECORDING COATING

Joseph E. Haefele, San Jose, Cecil R. Hawkins, Los Gatos, and Ronald E. Kubec, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 44,284, June 8, 1970. This application Sept. 18, 1972, Ser. No. 289,892

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 4 Claims

1. A magnetic recording medium comprising ferromagnetic and alumina particles dispersed in a binder as a unitary coating upon a non-magnetic substrate, each of the alumina particles disposed in said binder to be substantially equal to the thickness of the medium to form a solid barrier between the surface of the medium and the underlying non-magnetic substrate and present in an amount not above 5% by weight of the ferromagnetic and alumina particles.

3,843,405

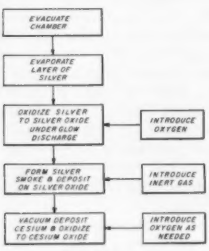
PROCESS FOR PRODUCING SILVER-OXYGEN-CESIUM PHOTON CONVERTER

Haden J. Bourg, Jr., Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,952

Int. Cl. B44d *1/14, 1/18*

U.S. Cl. 117—217 5 Claims


EVACUATE CHAMBER
EVAPORATE LAYER OF SILVER
OXIDIZE SILVER TO SILVER OXIDE UNDER GLOW DISCHARGE
INTRODUCE OXYGEN
FORM SILVER SMOKE & DEPOSIT ON SILVER OXIDE
INTRODUCE INERT GAS
VACUUM DEPOSIT CESIUM & OXIDIZE TO CESIUM OXIDE
INTRODUCE OXYGEN AS NEEDED

1. In a method for forming a photoemissive surface, the steps of applying to a substrate a film of elemental silver, thereafter oxidizing said silver film to produce silver oxide, forming silver smoke and depositing it over the oxide film as a black film of low density silver particles, and under the influence of heat applying over the low density particles a film of cesium which forms cesium oxide via decomposition of the silver oxide.

3,843,406

PROCESS AND APPARATUS FOR TREATING SOLIDS ENRICHED WASH LIQUIDS

Edward S. Wright, Pittsburgh, Pa., and John W. Angstadt and Otto C. Krolopp, Williamsville, N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,698

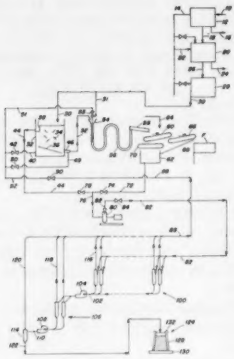
Int. Cl. C13l *1/00*

U.S. Cl. 127—27 14 Claims

1. A process for treating a solids-containing liquid stream which comprises:

(a) passing said solids-containing liquid serially through a plurality of concentration zones;

(b) passing a concentrated solids-containing slurry to a settling zone provided with a removable liner material;



(c) decanting liquid from said settling zone; and

(d) recovering said solids in said removable liner material from said settling zone.

3,843,407

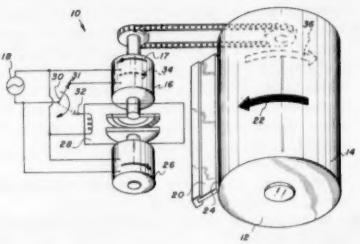
BLADE CLEANING WITH REVERSE MOVEMENT

Bruce E. Thorp, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1973, Ser. No. 391,197

Int. Cl. B08b *7/00*

U.S. Cl. 134—6 9 Claims



1. In an apparatus for improved blade cleaning of an imaging surface in electrostatographic apparatus containing drive means for normally driving an imaging surface in a first direction of motion and means for stopping said drive means for stopping said imaging surface, wherein said imaging surface is cleaned by a cleaning blade contacting said imaging surface and extending into said first direction of motion of said surface; the improvement comprising reversing means for intermittently reversing said direction of motion of said imaging surface while said cleaning blade is maintained in said same contact with said imaging surface.

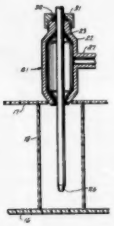
3,843,408
METHOD OF CLEANING AIR FILTERS

Benjamin F. Tobin III, 10545 W. Loyola Drive, Los Altos, Calif. 94022

Continuation-in-part of application Ser. No. 223,208, Feb. 3, 1972, which is a continuation-in-part of application Ser. No. 108,139, Jan. 20, 1971, now Patent No. 3,693,406, which in turn is a continuation of application Ser. No. 5,546, Jan. 26, 1970, now Patent No. 3,606,897. This application Oct. 2, 1972, Ser. No. 293,833

Int. Cl. B08b *3/02, 9/00*

U.S. Cl. 134—24 5 Claims



1. A method of cleaning a cylindrical filter element having longitudinal pleats and dirt on the inside thereof comprising the steps of:

at least partially closing the end of the filter element;

inserting a nozzle through the closed end for impinging a forceful flow of water against the filter element in a direction along the pleats and at an angle to a normal to the pleats; and

moving the nozzle along the length of the filter element for dislodging dirt from the pleats, and wherein the end is partially open so that a portion of the forceful flow discharges therethrough for carrying surface dirt and another portion of the forceful flow passes through the filter element for dislodging dirt from the pores thereof.

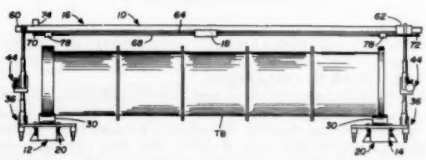
3,843,409
HEAT EXCHANGER CLEANING SYSTEM

Charles O. Ice, Jr., Long Beach, Calif., assignor to Hydro-Vel Services, Inc., Monahans, Tex.

Original application June 26, 1970, Ser. No. 50,067, now Patent No. 3,703,905. Divided and this application Sept. 25, 1972, Ser. No. 292,178

Int. Cl. B08b *3/02*

U.S. Cl. 134—34 9 Claims



1. A method of cleaning heat exchangers including the step of:

positioning a heat exchanger tube bundle at a cleaning station;

moving a cleaning head linearly along a plurality of paths each extending generally longitudinally of the positioned at arcuately spaced points in an arc around the tube bundle; and

discharging cleaning material from the head during the movement thereof.

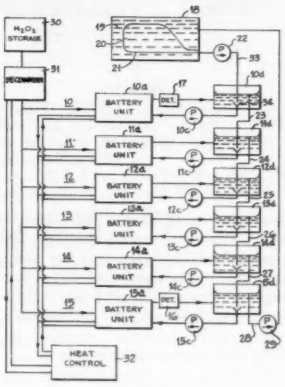
3,843,410
FUEL CELL POWER STATION

Dieter Spahrbier, Frankfurt-Rodelheim, Germany, assignor to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 238,501, Mar. 27, 1972. This application Aug. 24, 1972, Ser. No. 283,462

Int. Cl. H01m *27/12*

U.S. Cl. 136—86 R 17 Claims



1. A liquid fuel cell battery arrangement comprising:

a plurality of individual circulating systems for fuel-electrolyte mixture, each system including a separate fuel cell battery element, a separate associated individual storage tank for said mixture, and means for circulating said mixture from said tank through said associated battery element and back into the same storage tank;

means for introducing fuel-electrolyte mixture from outside said circulating systems into one of said individual storage tanks;

means for cascading said mixture consecutively through all of said individual storage tanks, said cascading means comprising a separate overflow pipe connecting each storage tank to the next, each overflow pipe having its inlet positioned to establish a predetermined overflow level in one tank, and its outlet positioned below the predetermined overflow level in the next cascade tank;

means for sensing the concentration of said mixture circulating in one of said individual circulating systems; and

means responsive to said sensing means to control the flow of said mixture through said introducing means to regulate the sensed concentration.

3,843,411
METHOD OF MAKING FRONT TERMINAL BATTERY CONNECTION

Daniel Orlando, New Berlin, Walter Carl Kirchberger, Menomonee Falls, and John Clark Ware, Jr., Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

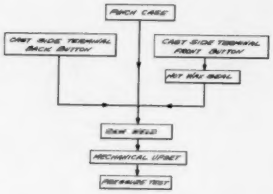
Filed Mar. 14, 1973, Ser. No. 341,230

Int. Cl. H01m *5/00*

U.S. Cl. 136—135 S 11 Claims

1. A method of making a battery terminal connection through an opening in a battery case wall comprising positioning a first member on one side of said wall, said first member having a main body section and an extending section adapted to be positioned in said opening, placing said

extending section in said opening and through said wall with a portion of said section projecting from the opposite side of said wall, placing a second member over said extending section of said first member, said second member being fabricated with an accommodating compartment for frictionally engaging said extending section



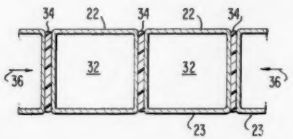
of said first member, fluidizing with force the contacting portions of said first and second members and plasticizing a portion of said wall between said first and second members, permitting the fluidized contacting portions to cool and forcing said first and second members together with a portion of said fluidized wall in between.

3,843,412

GALVANIC ELECTRODE COVER METHOD

Erik Gustav Sundberg, Nol, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Continuation of application Ser. No. 757,622, Sept. 5, 1968. This application Apr. 7, 1970, Ser. No. 24,419
Claims priority, application Sweden, Sept. 22, 1967, 13,102/67
Int. Cl. H01m *35/04*
U.S. Cl. 136—55 **3 Claims**



1. The method of making a cover for retaining active material on the respective rods of conductive material of a plural, parallel rod electrode for use in a storage battery having positive and negative electrodes and a liquid electrolyte comprising the steps of:

(a) providing a plurality of like fibrous sleevings;

(b) placing the sleevings under at least nominal tension on substantially flat mandrels;

(c) alternating the sleeving covered mandrels with a electrolyte resistant synthetic resinous material in contact with the sleeving of the immediately adjacent mandrels, the material being substantially one half the width of the mandrels and transversely centered with respect thereto;

(d) compressing the alternated sleeving covered mandrels and material while applying heat to secure adjacent ones of the sleevings to each other in the area of the resinous material by the impregnation of the sleevings with the material;

(e) removing the mandrels from the secured sleevings; and

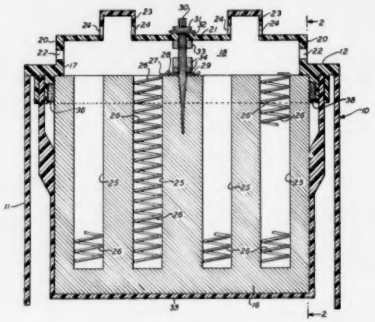
(f) expanding the secured sleevings to form a plurality of tubes of substantially rectangular cross section, with the resinous material substantially coextensive with the width of the expanded electrode cover.

3,843,413

LOW RESISTANCE TERMINAL CONNECTOR FOR AIR-DEPOLARIZED CATHODE

Jacob E. Schmidt, Little Falls Township, Passaic County, N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Oct. 30, 1972, Ser. No. 301,870
Int. Cl. H01m *29/02*
U.S. Cl. 136—86 A **1 Claim**



1. An air-depolarized primary battery comprising an electrolyte solution, an anode in said solution, a carbon cathode partially immersed in said solution and having a plurality of vertical cavities therein extending through the top face thereof to the bottom portion thereof, said cavities being cylindrically shaped, a helix wire of a conductive spring material inserted in each of said cavities throughout the length thereof, each of said wire helices having normally a larger outside diameter than the diameter of said respective cavity causing the wire helix to exert a radial pressure against the wall of the cavity and provide a continuous firm engagement of the helix on a helical line with said cathode, a terminal post anchored into an upper portion of said cathode between said cavities in electrically conductive relationship with the cathode, a lead wire extending from and electrically connected to each of said wire helices. and means electrically connecting each of said lead wires to said terminal post.

3,843,414

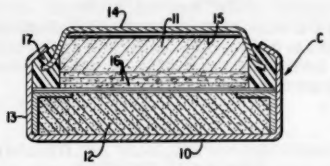
METHOD OF PREPARING NON-AQUEOUS ELECTROLYTE FREE OF ANY TRACE OF FREE ALUMINUM CHLORIDE

Jean-Paul Gabano, Poitiers, and Gerard Lehmann, Liguge, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Original application Mar. 8, 1971, Ser. No. 121,825, now abandoned. Divided and this application May 15, 1973, Ser. No. 360,439
Claims priority, application France, Mar. 27, 1970, 7011097
Int. Cl. H01m *11/00*
U.S. Cl. 136—156 **4 Claims**

1. A method for preparing an electrolyte for use in electrochemical cells having a lithium base negative electrode and a metal chloride positive electrode which is insoluble in methylchloroformate comprising the steps of effecting a reaction by heating of a substantially equimolecular mixture of potassium chloride and aluminum chloride at about 300° C. to produce potassium tetra-

chloroaluminate as reaction product, utilizing a slight excess of potassium chloride in said mixture to prevent presence of any free aluminum chloride in said reaction product, effecting a solution of said potassium tetrachloroaluminate reaction product in methylchloroformate and reacting said solution in substantially stoichirometric ratio with lithium perchlorate to yield lithium



tetrachloroaluminate dissolved in said methylchloroformate together with potassium perchlorate which is insoluble in said methylchloroformate and decanting said potassium perchlorate to provide as an end product said electrolyte of lithium tetrachloroaluminate dissolved in methylchloroformate and free of any trace of free aluminum chloride.

3,843,415

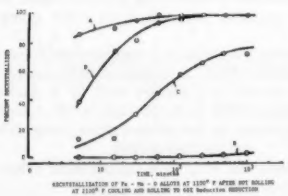
METHOD OF PRODUCING ENAMELING IRON, AND ENAMELING IRON COMPOSITIONS AND ARTICLES

William C. Leslie, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Continuation-in-part of application Ser. No. 842,829, July 11, 1969, which is a continuation-in-part of application Ser. No. 593,799, Nov. 14, 1966, both now abandoned. This application Mar. 9, 1972, Ser. No. 233,280

Int. Cl. C21d *7/14, 9/46*

U.S. Cl. 148—2 **2 Claims**


PERCENT RECRYSTALLIZED
TIME, minutes
RECRYSTALLIZATION OF Fe - Ti - O ALLOYS AT 1150° F AFTER HOT ROLLING AT 2100° F COOLING AND ROLLING TO 66% Reduction REDUCTION

1. A method of producing sag-resistant enameling iron sheet having rimming steel quality surfaces and enhanced recrystallization response, comprising:

(a) air melting and refining an iron base melt to a composition consisting essentially of, by weight percent:

Carbon	.05 to about 0.10%.
Manganese	0.07 to 0.12%.
Sulfur	Up to 0.04%.
Silicon	Up to 0.10%.
Titanium	Up to 0.01%.
Iron	Balance, except for oxygen and incidental steelmaking impurities.

(b) deoxidizing the refined composition by vacuum carbon deoxidation and for a time and at a subatmospheric pressure sufficient to reduce the oxygen content of the melt to less than 0.02% and the carbon content to less than 0.04%,

(c) without any addition of titanium, casting the vacuum-carbon-deoxidized composition of step (b) into a rollable article,

(d) rolling the article in a plurality of rolling steps including a plurality of successive hot rolling steps defining a hot rolling zone and wherein at least the final rolling step is a heavy cold rolling step of at least about 50% reduction to provide a sheet,

(e) heating said cold rolled sheet in a single subcritical annealing treatment to essentially completely recrystallize said sheet.

3,843,416

SUPERPLASTIC ZINC/ALUMINIUM ALLOYS

Christopher R. Cross and Subodh Kapoor, Cardiff, Wales, assignors to Imperial Smelting Corporation (Alloys) Limited, London, England

No Drawing. Filed Apr. 6, 1972, Ser. No. 241,834

Claims priority, application Great Britain, Apr. 8, 1971, 9,129/71

Int. Cl. C22c *17/00;* **C22f** *1/16*

U.S. Cl. 148—11.5 R **9 Claims**

1. A method of producing superplastic zinc/aluminium alloy sheet from a body of alloy consisting essentially of zinc and aluminium, the amount of aluminium being from 1% to 19.8% by weight, the amount of any copper present as a further alloying element being up to 1% by weight, and the amount of any magnesium present as a further alloying element being up to 1% by weight, whereby the alloy exhibits the zinc/aluminum eutectic structure, said method comprising finish rolling said body of alloy at a temperature between 20 and 200° C. to produce a sheet whose thickness is reduced by between 50% and 99% based on the starting thickness.

3,843,417

METHOD FOR HOT DIPPING ALUMINIUM-KILLED STEEL SHEET

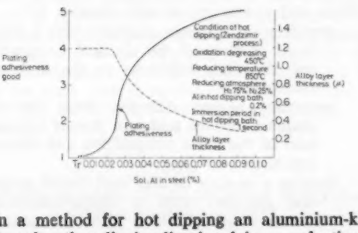
Misao Ohbu and Kenichi Asakawa, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,890

Claims priority, application Japan, Dec. 1, 1971, 46/97,321

Int. Cl. B44d *1/34;* **C23c** *1/02, 1/04*

U.S. Cl. 148—12 **9 Claims**


Plating adhesiveness good
Condition of hot dipping (Sendzimir process)
Oxidation degreasing 450°C
Reducing temperature 850°C
Reducing atmosphere H2 75% N2 25%
Al in hot dipping bath 0.2%
Immersion period in hot dipping bath 1 second
Plating adhesiveness
Alloy layer thickness
Alloy layer thickness (μ)
Sol. Al in steel (%)

1. In a method for hot dipping an aluminium-killed steel sheet in a hot dipping line involving a reduction annealing pretreatment process which includes the steps of hot rolling said steel sheet, descaling the sheet by acid pickling, cold rolling the sheet, and then degreasing the sheet in hot dipping equipment, reduction annealing the sheet, cooling the sheet to a suitable dipping temperature and immersing the sheet in a hot dipping bath, the improvement which comprises winding said aluminium-killed steel sheet at a temperature higher than 650° C. after the hot rolling.

3,843,418

ALUMINUM ALLOYS FOR ELECTRICAL CONDUCTORS AND METHOD THEREOF

Kyuya Oida, Ikuo Hatano, and Megumu Sumitomo, Nagoya, Hiroshi Oasa, Osaka, and Minoru Yokota, Amagasaki, Japan, assignors to Sumitomo Chemical Co., Ltd., and Sumitomo Electric Industries, Ltd., both of Osaka, Japan

Original application July 23, 1970, Ser. No. 57,626, now abandoned. Divided and this application Oct. 17, 1972, Ser. No. 298,427

Int. Cl. C22f *1/04*

U.S. Cl. 148—12.7 6 Claims

1. The method of manufacturing a high strength aluminum alloy for electric conductors comprising the steps of producing a heated alloy which comprises 0.2 to 1.2 wt.-percent magnesium, 0.1 to 0.9 wt.-percent silicon, 0.0005 to 0.4 wt.-percent beryllium and the balance essentially aluminum; cold working the produced alloy with approximately 10 to 30% reduction in area after quenching the heated alloy from in the range of about 500° C. to 550° C.; then aging the alloy at about 150° C. to 200° C.; and then cold working the alloy.

3,843,419

METHOD OF AND APPARATUS FOR CARBURIZING STEEL BODIES

Theodor Schmidt and Rudolf Meyer, Essen, Germany, assignors to Ludwig-Ofag-Indugas Industriofenanlagen GmbH, Essen, Germany

Continuation-in-part of abandoned application Ser. No. 36,508, May 12, 1970. This application Nov. 13, 1972, Ser. No. 306,276

Int. Cl. C23c *11/12*

U.S. Cl. 148—16.5 8 Claims

1. A method of carburizing a plurality of steel articles, comprising the steps of:

(a) charging a carburizing furnace chamber with a succession of said steel articles;

(b) passing through said furnace chamber and into contact with the steel articles successively charged into same, at a substantially constant volume flow rate, a carrier gas consisting predominantly of carbon monoxide, hydrogen and nitrogen and containing a minor proportion of at least one hydrocarbon gas adapted to diffuse carbon into carburization-active surfaces of said steel articles;

(c) maintaining a carburization temperature in said furnace and a treatment time for the successive articles which is substantially constant;

(d) continuously measuring the rate of carburization of said articles and the rate of abstraction of carbon from said carrier gas in said chamber by:

providing said furnace chamber with a wall composed of steel of the identical composition to and the same thickness as the steel of said articles,

permitting carbon diffusion from the furnace chamber through said wall thereof composed of steel of the same composition and thickness as that of said articles,

flushing a surface of said wall turned away from said chamber with a noncarbonaceous gas stream whereby carbon from the environment in said chamber diffuses through said wall substantially at the rate at which carbon diffuses into said articles and is entrained by said flushing gas stream,

detecting the carbon content of said gas stream after flushing of said wall therewith; and

(e) controlling the concentration of the hydrocarbon in the carrier gas introduced into said furnace in accordance with the carbon content of said gas stream.

3,843,420

SPUTTERED GRANULAR FERROMAGNETIC IRON-NICKEL-SILICA FILMS

Jonathan Isaac Gittleman and Joseph John Hanak, Trenton, N.J., assignors to RCA Corporation

Filed Oct. 24, 1972, Ser. No. 299,770

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 10 Claims

1. A sputtered granular ferromagnetic film consisting essentially of a composition having the formula

$$(Fe_yNi_{1-y})_{1-x}(SiO_2)_x$$

wherein x is from 0.001 to 0.7 part by volume and y is from 0.001 to 0.999 part by volume, and further characterized by having granular particle size on the order of 10 to 200 angstroms.

3,843,421

WROUGHT NICKEL-BASE ALLOY AND PRODUCTS THEREOF

Arthur R. Cox, Lake Park, Fla., Paul R. Holiday, Haverstraw, N.Y., and Gary K. Lewis, Riveria Beach, and Sven D. Soderquist, Palm Beach Gardens, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed Oct. 16, 1972, Ser. No. 298,068

Int. Cl C22c *19/00*

U.S. Cl. 148—32 3 Claims

1. A wrought nickel-base superalloy article having a nominal chemistry which consists essentially of, about by weight, 12.4 percent chromium, 18.5 percent cobalt, 3.2 percent molybdenum, 4.3 percent titanium, 5 percent aluminum, 0.8 percent vanadium, 0.02 percent boron, 0.06 percent zirconium, 0.07 percent carbon, balance essentially nickel, and characterized by V-notch strengthening in the temperature range of 1300°–1400° F.

3,843,422

ROLLING METHOD FOR PRODUCING SILICON STEEL STRIP

Robert H. Henke, 4 Foxwood Drive, Pittsburgh, Pa. 15238

Filed Mar. 30, 1972, Ser. No. 239,538

Int. Cl. H01f *1/04*

U.S. Cl. 148—111 4 Claims

1. The method of producing grain oriented silicon steel strip for magnetic purposes from slabs comprising the steps of:

(a) heating the slabs to a temperature above 2200° F., to stabilize MnS, and immediately rolling said slabs into strip in a planetary mill to a thickness range of about 0.060 to 0.150 inch while maintaining the temperature in the temperature range 2100° F. to 2200° F., during said rolling,

(b) cooling the strip to a temperature below 1500° F. and above 300° F., and

(c) reducing the strip in thickness to about 0.020 to 0.030 inch while in the temperature range 300° F. to 1500° F.

3,843,423

METHOD FOR PRODUCING STEEL SHEETS OR STRIPS FOR MAKING CANS

Hidejiro Asano, Kitakyushu, and Yashichi Oyagi, Yachiyo-machi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

No Drawing. Filed Aug. 23, 1973, Ser. No. 391,020

Claims priority, application Japan, Aug. 24, 1972, 47/84,100

Int. Cl. C21d *9/46*

U.S. Cl. 148—12 1 Claim

1. A method for producing can-making steel sheet comprising subjecting a steel slab containing not more than 0.03% C, not more than 1.0% Mn, not more than 0.04% P, not more than 0.02% O, with the balance being iron and unavoidable impurities to finish hot rolling at a tem-

perature between the A_3 transformation point and 750° C., coiling the sheet at a temperature not lower than 620° C., and cold rolling thus obtained hot rolled sheet or strip after acid pickling with a reduction rate not lower than 80%.

3,843,424

NORMAL GRAIN GROWTH (110) [001] TEXTURED IRON-COBALT ALLOYS

Donald R. Thornburg and Karl Foster, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1972, Ser. No. 228,071

Int. Cl. H01f *1/00*

U.S. Cl. 148—120 **6 Claims**

1. An alloy member which exhibits improved permeabilities at low field strengths resulting from crystallographic orientation compared to unoriented magnetic material of the same composition consisting essentially of from about 5% to about 35% cobalt, up to 2% chromium, up to 1% manganese, up to 3% silicon, less than 0.005% sulfur and the balance essentially iron with incidental impurities, the alloy having a primary recrystallized grain structure in which a major proportion of the grains exhibit a (110) texture and in which a major proportion of the oriented grains have cube edges of their crystal lattices aligned within 10° of the rolling direction.

3,843,425

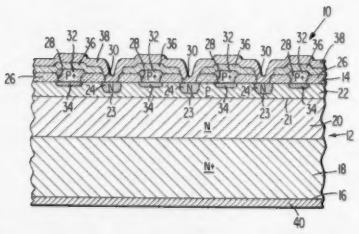
OVERLAY TRANSISTOR EMPLOYING HIGHLY CONDUCTIVE SEMICONDUCTOR GRID AND METHOD FOR MAKING

Frederic Leroy Katnack, Oldwick, N.J., assignor to RCA Corporation

Original application Apr. 5, 1971, Ser. No. 131,342, now abandoned. Divided and this application Oct. 5, 1972, Ser. No. 295,212

Int. Cl. H01l *7/64*

U.S. Cl. 148—187 **6 Claims**



1. A method for making a semiconductor device, comprising the steps of:

providing a semiconductor body having a region of a first conductivity-type therein adjacent one surface of the body, with an insulating coating on said surface;

forming a communicating slot in said coating which extends to said surface;

forming a semiconductor layer of said first conductivity type in said slot which contacts said region;

diffusing impurities of said one conductivity-type into said semiconductor layer so that said layer is highly conductive with respect to said region; and

diffusing a plurality of segments of a second conductivity-type into said region from said surface is spaced relation to said semiconductor layer.

3,843,426

PROPELLANT COMPOSITIONS WITH FERROCENE HOMO-POLYMER

Chester W. Huskins, Huntsville, and Dennis C. Van Landuyt, Auburn, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application June 15, 1971, Ser. No. 155,670. Divided and this application July 12, 1972, Ser. No. 270,797

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.2 **4 Claims**

1. A propellant composition comprising; a butadiene polymer binder of about 10 to about 25 weight percent, a metal fuel of about 5 to about 29 weight percent, an oxygen oxidizer of about 50 to about 75 weight percent, and a ferrocenylbutadiene dimer and trimer homopolymer of an amount of about 0.01 to about 20 weight percent.

3,843,427

METHOD OF MANUFACTURING A GAS-DISCHARGE DISPLAY PANEL

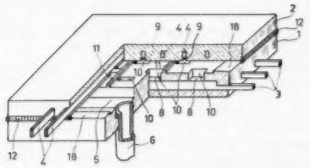
Johannes van Esdonk, Jacobus Hubertus Jacobs, Johannes Petrus Hornman, and Wilhelmus Johannes van de Laar, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1971, Ser. No. 119,487

Claims priority, application Netherlands, Mar. 21, 1970, 7004088

Int. Cl. C23f *17/00;* **H05k** *3/06*

U.S. Cl. 156—3 **4 Claims**



1. In the method of manufacturing a gas-discharge display panel comprising at least one bottom plate and one top plate of insulating, transparent material, the bottom and top plates being provided with strip-shaped relatively insulated conductors, parts of the surfaces of which are in contact with a gas atmosphere in cavities between the conductors, the steps of embedding a comb-shaped conductor in an insulating plate with the tines of the comb-shaped conductor extending up to the surface of the plate, and thereafter chemically etching the tines to form cavities in the insulating plate.

3,843,428

METHOD OF MANUFACTURING A THERMO-COMPRESSION CONTACT

Wolfgang Kraft, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed July 18, 1973, Ser. No. 380,327

Int. Cl. C23f *1/02;* **H01l** *7/50*

U.S. Cl. 156—7 **8 Claims**

1. An improved method of manufacturing a thermocompression contact on a metal layer of aluminum contacting the zone of a planar semiconductor component, said layer disposed in a passivating layer covering the surface of said

semiconductor component, wherein a semiconductor substrate is provided with a masking layer having a window therein and a contacting metal layer over said masking layer and the exposed portion of said substrate, wherein the improvement comprises:

providing a doped etchable layer of aluminum oxide by thermal oxidation of said contacting metal layer;

depositing a passivating layer having a first window therein over said aluminum oxide layer; and

removing the aluminum oxide layer beneath said first window by etching.

3,843,429

GLASS FIBER REINFORCED RESIN TANK STRUCTURES AND METHOD OF FABRICATING

Wallace B. Jessup, Portland, Oreg., assignor to The Stebbins Engineering and Manufacturing Company, Watertown, N.Y.

Continuation of abandoned application Ser. No. 73,538, Sept. 18, 1970. This application Oct. 2, 1972, Ser. No. 294,362

Int. Cl. B29c *27/28;* **B65h** *81/04*

U.S. Cl. 156—69 **13 Claims**

1. A method of on-site fabrication of glass fiber, reinforced, plastic-resin tank structures, using a plurality of pre-fabricated, structural, arcuate liner panels of glass fiber, reinforced resin, comprising:

providing a base support for the tank structure,

temporarily securing vertical support and alignment beams to the base support at spaced intervals corresponding to the width of the liner panels to define the circumference of the tank structure, the beams extending the height of the tank structure,

providing a central beam extending upwardly from the base support having a plurality of lateral arms extending therefrom into contact with the temporary vertical support beams to support the side walls of the structure during fabrication thereof,

temporarily securing by removable rivets the liner panels to the vertical support and alignment beams, the panels extending the height of the beams and abutting each other along their side edges in coincidence with the vertical support beams to define the side walls of the tank structure,

providing a top cover for the tank structure of glass fiber, reinforced resin,

securing the top cover to the top edges of the liner panels,

applying a mixture of chopped glass fiber and resin over the joint areas between the abutting liner panels and between the top cover and the top edges of the liner panels to seal them and form an integral tank structure,

mixing resin and catalyst together for impregnation of continuous glass fiber roving for winding of the side walls of the tank structure closely adjacent the point of application of the resin-impregnated glass fiber to the side walls,

impregnating the glass fiber roving with the resin-catalyst mixture,

winding successive layers of the resin-impregnated continuous glass fiber roving around the outer surfaces of the liner panels in a helical pattern extending spirally both upward and downward to provide hoop strength for the tank structure,

removing the support and alignment beams temporarily secured to the liner panels from the interior of the tank structure after curing of the resin, and

applying resin-impregnated chopped glass fiber over the inner portion of the base support surrounded by the liner panels and joint areas between the lower ends of the liner panels in the base support to form an integral bottom wall for the tank structure.

3,843,430

CHROMATE-FREE BRIGHT DIP FOR ZINC AND CADMIUM SURFACES

David H. Kinder, Watertown, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,784

Int. Cl. C23f *1/00;* **C23g** *1/36*

U.S. Cl. 156—20 **13 Claims**

1. A hexavalent chromium-free pulverulent composition for dissolution in water to provide a bright dip for zinc and cadmium surfaces, said composition consisting essentially of

(a) from 15% to 99.8% by weight of a water-soluble nitrate salt;

(b) up to 80% by weight of an acid salt selected from the group consisting of sodium, potassium and ammonium bisulfates and sulfamic acid;

(c) from .2% to 15% by weight of a water-soluble fluoride salt;

(d) up to 15% by weight of citric acid;

(e) up to 15% by weight of a trivalent chromium compound;

(f) up to 15% by weight of an acid soluble oxidation resistant organic dye;

wherein the amount of acid salt in the composition is always sufficient to produce a pH of from 4.0 to 0.5 upon addition of from 0.3 to 6 ozs. of said composition per gallon of water.

3,843,431

PROCESS FOR MAKING FIBROUS COMPOSITION BOARD

William W. Dostalik, Miami, Okla., assignor to Nancy L. Dostalik, Miami, Okla.

No Drawing. Filed June 23, 1972, Ser. No. 265,621

Int. Cl. B32b *5/28, 27/42*

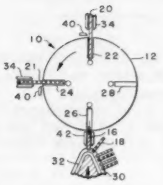
U.S. Cl. 156—62.2 **2 Claims**

1. A process for the production of a composition board which comprises wetting a quantity of hogged wood materials until the moisture content of said wood materials is raised to approximately thirty percent on an oven dry basis, then grinding said moisturized wood materials under such conditions as to provide a fiber portion wherein approximately ninety-five percent of the fibers have a length of less than one-half inch and wherein the lengths of said fibers are also about ten times the width and thickness thereof, drying the ground moisturized wood material until the moisture content thereof is reduced to about five percent on an oven dry basis, separating the dried ground wood material into two fractions, the first of said fractions being of said fibers and having a bulk density of about four to ten pounds per cubic foot, the second of said fractions being of fine wood particles having a bulk density of about six to twelve pounds per cubic foot and small enough to pass through a twenty mesh screen, mixing a quantity of fibers with an adhesive mixture to provide a fiber-adhesive mixture for the core of said composition board, separately mixing a quantity of the fine wood particles with an adhesive to provide a fines-adhesive mixture for the surface layers of said composition board, forming a three layered mat by placing a layer of fiber-adhesive mixture on a layer of fines-adhesive mixture and superimposing another layer of fines-adhesive mixture and being of substantially the same thickness as the lowermost layer of fines-adhesive mixture, positioning the three-layered mat between two screens, one on top of the mat and the other on the bottom of the mat, compacting the three-layered mat under elevated temperatures and pressures for a period of time not exceeding six minutes with a press closing time of less than forty seconds, and thereafter separating the screens to produce a composition board with a nearly uniform density core between surface layers of substantially higher density.

3,843,432
METHOD TO PRODUCE A BONDED PILE FABRIC

Charles A. Wethington, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 27, 1972, Ser. No. 221,216
Int. Cl. B32b 5/02, 31/00; D05c 17/02
U.S. Cl. 156—72 2 Claims

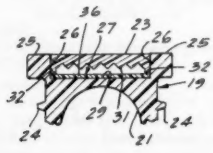


1. A method of manufacturing a cut, pile fabric on a machine having an elongated rotably mounted rotor member having a plurality of rows of apertures therein with the rows of apertures extending in the axial direction of the rotor member comprising the steps of: providing a plurality of yarn supplies of a first color adjacent the rotor member, providing a plurality of yarn supplies of a second color at an angle to the yarns of a first color adjacent the rotor member, supplying certain selected yarns of the first color into certain apertures of one row of the rotor member, severing the certain selected yarns of said first color from its supply, rotating the rotor to a position whereat the apertures of the one row are adjacent the yarns of a second color, supplying certain selected yarns of the second color into other apertures of the one row of apertures of the rotor member, severing the certain selected yarns of said second color from its supply, rotating the rotor member to a position where the one row of apertures is adjacent a yarn receiving adhesive member and simultaneously inserting said first color yarn and said second color yarn from the one row of apertures into the adhesive member.

3,843,433
METHOD OF SEALING AND MOUNTING REFLECTORS ON BICYCLE PEDAL TREADS

Gerald Golden, Highland Park, Charles V. Wrobel, Jr., Arlington Heights, and Walter Dian, Downers Grove, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Original application May 4, 1971, Ser. No. 140,148, now Patent No. 3,755,050. Divided and this application Aug. 15, 1972, Ser. No. 280,848
Int. Cl. B32b 31/16; B29f 3/00
U.S. Cl. 156—73 3 Claims



1. A method of sealing and mounting reflectors on bicycle pedal treads, comprising the steps of,

the provision of an acrylic reflex reflector,

coextruding a strip of acrylonitrile-butadiene-styrene copolymer with a vinyl pedal tread along an outwardly facing plane surface of the tread,

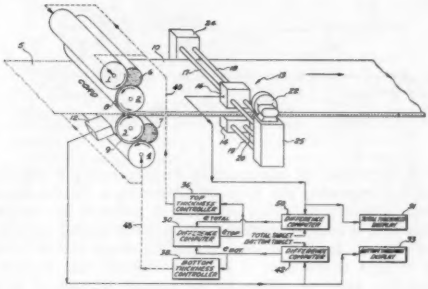
abutting the acrylic reflex reflector with the strip of acrylonitrile-butadiene-styrene copolymer and then,

sealing the reflector to the strip of acrylonitrile-butadiene-styrene copolymer from dust and moisture, and retaining the reflector to the pedal tread solely by the sealing operation.

3,843,434
PROCESS CONTROL

Robert Lee Heiks, Columbus, Gerald A. Lasson, Dublin, and Robert Eugene McCall, Columbus, Ohio, assignors to Industrial Nucleonics Corporation

Filed June 12, 1972, Ser. No. 262,000
Int. Cl. B29h 9/02, 17/02
U.S. Cl. 156—110 24 Claims



1. Apparatus for automatically controlling a tire calender to maintain a desired thickness profile in a strip of laminated sheet material comprising first and second layers of rubber and an intermediate layer of tire cord, in which said first layer of rubber is formed in a substantially continuous fashion between a first pair of coacting calender rolls having adjustable elements at either end thereof for adjusting the spacing between said first pair of rolls to vary the thickness of said first layer of rubber, and said second layer of rubber is formed in a substantially continuous fashion between a second pair of coacting calender rolls having adjustable elements at either end thereof for adjusting the spacing between said second pair of rolls to vary the thickness of said second layer of rubber, and in which said layer of tire cord is laminated between said first and second layers of rubber by adjoining calender rolls, said apparatus comprising

first measuring means located in a fixed position adjacent one of said adjoining calender rolls at the input side thereof for providing an indication of the thickness of said first layer of rubber,

first comparison means for comparing said first layer thickness indication with a first layer target to provide a first layer error indication,

first controller means responsive to said first layer error indication for actuating said adjustable elements associated with said first pair of coacting calender rolls, to maintain said first layer thickness substantially at said first layer target,

second measuring means located at the strip output side of said adjoining calender rolls for providing an indication of the total thickness of said strip,

second comparison means for comparing said total thickness indication with a total thickness target to provide a total error indication for said laminated strip,

third comparison means for comparing said first layer error indication with said total error indication to provide an error indication for said second layer, and

second controller means responsive to said second layer

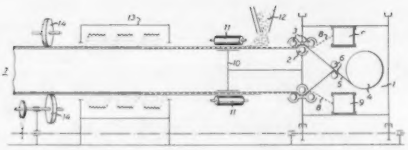
error indication for actuating said adjustable elements associated with said second pair of coacting calender rolls, to maintain said total thickness substantially at said total thickness target.

3,843,435

PROCESSES AND APPARATUSES FOR CONTINUOUSLY MANUFACTURING TUBULAR BODIES OF REINFORCED SYNTHETIC PLASTIC

Torsten Erik Theodor Strom, Klippan, Sweden, assignor to AB Broderna Ottosson & Co., Klippan, Sweden

Filed June 19, 1972, Ser. No. 263,825
Int. Cl. B32b 1/08
U.S. Cl. 156—143 2 Claims



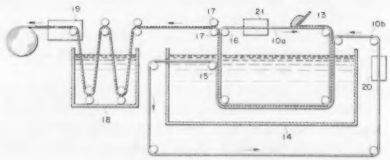
1. A process of continuously manufacturing a tubular body, comprising the steps of advancing a flexible hose from a supply, in which said hose is rolled in flat condition into a roll, by pulling over a torus-shaped annular member to expand it into cylindrical shape and to hold it in said shape over a distance beyond said annular member, applying rollers to the exterior surface of said advancing hose within the range of said annular member to support said annular member and keep it substantially axially immovable within said hose, rotating said supply, said hose and said rollers around the axis of said annular member during said advancing, applying randomly oriented fibers and a curable plastic to the exterior surface of said advancing and rotating hose within an application zone beyond said annular member, and curing the applied plastic on said advancing and rotating hose within a curing zone following the application zone.

3,843,436

METHOD OF PRODUCING SYNTHETIC LEATHERS

Kisaku Yanagida, Tokyo, Ryuichi Kato, Chiba, Tadao Suzuki, Tokyo, and Yoshio Takano, Chiba, Japan, assignors to Kyowa Leather Cloth Co., Ltd., Tokyo, Japan

Filed June 15, 1972, Ser. No. 262,984
Int. Cl. B32b 31/00
U.S. Cl. 156—148 6 Claims



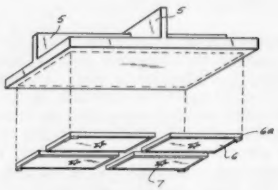
1. A method of producing synthetic leather comprising preparing a release substrate by twisting long filaments of polyethylene terephthalate having a thickness of 10 deniers or less to obtain yarns having a thickness of 80 to 200 deniers, plainly weaving said yarns into cloth in a density of at least 80/inch for warps and at least 70/inch for woofs and pressing the surfaces of the resulting cloth in the presence of heat at a temperature lower than the melting point of said cloth; applying a polymer solution onto the surface of the release substrate in the form of a layer; coagulating the polymer layer by soaking in a liquid which is compatible with a solvent of the polymer solution and nonsolvent for the polymer; removing the solvent from the polymer layer so as to form a porous film by interchanging in the coagulating bath the coagulating liquid and said solvent directly on the upper surface side of said polymer layer and through meshes of said cloth on the cloth side of said polymer layer; peeling the porous film from the release substrate; drying said film; and laminating the same with a fibrous base material.

3,843,437

WELDING OF DESIGNS ON SYNTHETIC PLASTIC MATERIAL

Jerrold Robinson, Scarsdale, N.Y., assignor to The Dimension Weld International Corporation

Filed Dec. 6, 1972, Ser. No. 312,517
Int. Cl. B31f 7/00
U.S. Cl. 156—219 6 Claims



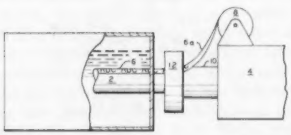
1. A composite die for providing designs on synthetic plastic material provided with a plurality of similar designs in printed form which are located adjacent one another, comprising a carrier member having an exposed surface; a plurality of individual die members each having one face in contact with said surface, and another face provided with a design which corresponds to one of the printed designs; and connecting means connecting each die member with said carrier member with freedom of adjustment of the position of the respective die member on said surface, so that the position of the design on the respective die member may be varied in dependence upon, and to compensate for, dimensional changes of the synthetic plastic material resulting in out-of-registry movement of respective ones of the printed designs with which the designs of the respective die members are intended to register.

3,843,438

ARTICLE LABELING METHOD

Henry Gabriel, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 9, 1971, Ser. No. 206,356
Int. Cl. B29c 15/00
U.S. Cl. 156—244 4 Claims



1. In the extrusion of a hollow thermoplastic conduit, a method for fixedly attaching a label to said conduit comprising:

positioning a thermoplastic label on a plasticized surface of said conduit, said label having a thickness less than about one-half mil;

passing said conduit, with said label positioned on the plasticized surface thereof, through a sizing ring thereby forcing said label to be embedded in said conduit to a depth substantially equal to the thickness of said label and simultaneously deforming said conduit to preselected dimensions;

thereafter cooling said conduit and said label to thereby fuse said conduit and said label one to the other.

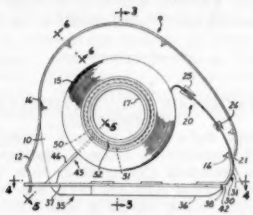
ERRATA

For Classes 156—350, 156—380, 156—335, 156—251, 156—276 and 156—334 see:
Patents Nos. 3,843,482 thru 3,843,487

3,843,439
TAPE DISPENSER

Robert Edward Rohlwing, Cary, Ill., assignor of a fractional part interest to Charles W. Jirauch

Filed Mar. 6, 1972, Ser. No. 231,847
Int. Cl. B32b *31/00;* **B44c** *7/00*
U.S. Cl. 156—523 **9 Claims**



1. A tape dispenser comprising

a container for rotatably carrying a roll of tape, an opening in said container for a piece of tape from said roll to exit from said container;

a pressing means on said container to apply said piece of tape to a surface as said piece of tape exits from said container;

a cutting means resiliently formed of a single piece of material with at least part of said container and movable relative thereto for severing said piece of tape from said roll; and

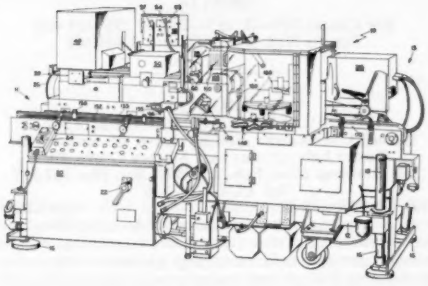
braking means operable to lock said roll in an approximately stationary position when said cuting means is moved to sever a piece of tape from said roll, including a means attached to and movable with the cutting means.

3,843,440
LABELING MACHINE

John R. Davies, Grand Rapids, Mich., assignor to Oliver Machinery Company, Grand Rapids, Mich.

Filed May 1, 1972, Ser. No. 238,433
Int. Cl. B26d *5/00*
U.S. Cl. 156—354 **28 Claims**

1. In a labeling apparatus for the application of labels cut from a label web to product surfaces, including means for advancing said labels to a label application station including a label transfer drum, means for advancing product surfaces to said label application station, means for applying said labels to said product surfaces at said label application station, means for inspecting said labels on said product surfaces, means for discharging said product surfaces with labels applied thereto from said apparatus, and means for intermittently driving both said label and product surface advancing means including said label transfer drum, and for driving said inspections means and said discharge means, the improvement comprising: transfer finger means for transferring said labels from said intermittently driven label transfer drum to said label application station, said transfer finger means comprising a reciprocating support element including vacuum openings on the transporting surface thereof for retaining said labels during said transfer, said support element adapted to be cam operated to reciprocate vertically between two stopped positions, one at the end of said intermittently driven label advancing means on one horizontal level where the labels are received on said transporting surface, and the other at said label application station on a second horizontal level where the labels are removed and applied to the product surface by label applying means, said support element also adapted to be cam operated to reciprocate horizontally between a position behind the vertical plane containing said labels as they are positioned to be received



by said support element on said intermittently driven label transfer means, a position at said vertical plane of said labels as they are so positioned such that said support element is cammed horizontally toward said label at said first horizontal level in order to adhere said label to said transporting surface just prior to being cammed vertically downwardly to said second horizontal level, and a position in front of said vertical plane immediately adjacent said product surface such that said support element is cammed horizontally toward said product surface at said second horizontal level thereby causing said labels to be adhered to said product surfaces, said support element then being cammed horizontally back to a position behind said plane of said labels on said label advancing means when said labels are in position to be received on said support element at said first horizontal level.

ERRATA

For Classes 162—17, 162—273, 162—343, 176—36, 161—199, 162—40, 161—4, 161—112, 161—125, 161—164, 161—165, 161—167 and 161—190 see:
Patents Nos. 3,843,468 thru 3,843,481

3,843,441
METHOD OF PRODUCING L-SERINE BY FERMENTATION

Koji Kubota, Kawasaki, and Takiko Onoda and Shinji Okumura, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Feb. 12, 1973, Ser. No. 331,774
Claims priority, application Japan, Feb. 22, 1972, 47/18,358
Int. Cl. C12d *13/06*
U.S. Cl. 195—30 **4 Claims**

1. A method of producing L-serine which comprises:

(a) culturing an L-serine-producing mutant of a parent strain of *Brevibacterium lactofermentum* or *Corynebacterium acetoacidophilum* under aerobic conditions in an aqueous fermentation medium containing as-

similable sources of carbon and nitrogen, and inorganic salts necessary for the growth of said mutant until a substantial amount of L-serine accumulates in said medium,

(1) said carbon source being selected from the group consisting of carbohydrates, acetic acid, and ethanol,

(2) the growth rate of said mutant on a culture medium containing enough sulfaguanidine to inhibit growth of said parent strain being substantially greater than the growth rate of said parent strain; and

(b) recovering the accumulated L-serine from said fermentation medium.

ERRATA

For Classes 195—2, 195—28 and 195—29 see: Patents Nos. 3,843,464 thru 3,843,467

3,843,442
IMMOBILIZED GLUCOSE ISOMERASE
Gerard J. Moskowitz, Buffalo Grove, Ill., assignor to Baxter Laboratories Inc., Morton Grove, Ill.
No Drawing. Filed Feb. 15, 1973, Ser. No. 332,937
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 F **10 Claims**

1. A process for the preparation of an immobilized glucose isomerase enzyme composition comprising reacting whole microbial cells containing glucose isomerase enzymes with a diazotized aromatic primary diamino compound.

3,843,443
POLYPEPTIDE MATERIALS BOUND TO FLUOROCARBON POLYMERS
Jerry Haskel Fishman, 227 Central Park W., New York, N.Y. 10024
No Drawing. Filed Mar. 30, 1973, Ser. No. 346,353
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **9 Claims**

1. A bound polypeptide material comprising a porous unsintered solid fluorocarbon polymer having an atomic ratio of carbon to fluorine of from about 0.5 to about 2.0, and a polypeptide polyelectrolyte, said polypeptide polyelectrolyte being directly adsorbed to at least a portion of the surface of said unsintered fluorocarbon polymer.

3,843,444
MEMBRANE SEPARATION PROCESS
Vilas V. Likhite, South Boston, Mass. (39 Venner Road, Arlington, Mass. 02174)
Filed Apr. 18, 1972, Ser. No. 245,137
Int. Cl. C07g *7/00, 7/02*
U.S. Cl. 195—66 R **9 Claims**

1. A process for selectively recovering a biologically-active organic compound from a liquid medium comprising the steps of:

(a) placing a first liquid medium containing a first biologically-active organic compound in a container on one side of a thin semipermeable barrier film;

(b) placing a second liquid medium containing a second biologically-active compound having specific attraction for said first compound in the container on the other side of the thin barrier film, said film forming a physical barrier against joinder of said first compound to said second compound;

(c) removing said first liquid medium from the container and leaving said first compound adhered to said one side of the film; and

(d) recovering said first compound from said one side of the film.

3,843,445
ASPARAGINASE PRODUCTION
Alma Aranshew Christie, Chorley Wood, Raymond Elsworth, Salisbury, Denis Herbert, Amesbury, and Kenneth Sargeant, Salisbury, England, assignors to Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
No Drawing. Continuation of abandoned application Ser. No. 50,321, June 26, 1970. This application Feb. 26, 1973, Ser. No. 335,793
Claims priority, application Great Britain, June 27, 1969, 32,554/69
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 A **21 Claims**

1. A process for the production of L-asparaginase comprising culturing an L-asparaginase producing micro-organism of the genus *Erwinia* in a culture medium characterized in that the medium is supplemented with an active proportion, which is 12 to 30 mg. per ml. of culture medium for a batch culture process and 7 to 20 mg. per ml. of culture medium for a continuous culture process of at least one of the amino acids selected from the group consisting of glutamic acid, serine, and aspartic acid, disrupting at least a proportion of the resulting bacterial cells to release L-asparaginase and isolating the released L-asparaginase.

3,843,446
PREPARATION OF ENZYMATICALLY ACTIVE MEMBRANES
Wolf R. Vieth, Belle Mead, Shaw S. Wang, New Brunswick, and Seymour G. Gilbert, Piscataway, N.J., assignors to Research Corporation, New York, N.Y.
No Drawing. Filed Apr. 20, 1971, Ser. No. 135,753
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **4 Claims**

1. A process of producing an enzymatically active membrane which comprises swelling a membrane formed from a protein selected from the group consisting of collagen, zein, casein, ovalbumin, wheat gluten, fibrinogen, mysoin, and mucoprotein, or a polypeptide selected from the group consisting of polyglutamate, polyaspartate, polyphenylamine, polytryrosine and copolymer of leucine and p-amino phenylanaline to its maximum capacity, and soaking said swollen membrane in an aqueous solution of an enzyme at a temperature of 4–10° C. for a period of 10 hours to 2 days until said enzyme complexes by forming complexing groups selected from the group consisting of multiple hydrogen bonds, salt linkages and van der Waals interactions with said membrane to form an enzyme membrane complex, and thereafter drying said enzyme-membrane complex.

3,843,447
PHOTOLYTICALLY ACTIVATED COUPLING TO POLYPEPTIDES
Terry Burkoth, Palo Alto, Calif., assignor to Syva Company, Palo Alto, Calif.
No Drawing. Filed Sept. 22, 1972, Ser. No. 291,425
Int. Cl. C07g *7/02, 7/00, 15/00*
U.S. Cl. 195—68 **12 Claims**

1. Method for linking a first polyfunctional compound with a second compound, wherein said first compound is a polypeptide having a plurality of functionalities capable of reacting with at least one common functionality, and said second compound has at least one group capable of reacting with a light activated diazosulfonate comprising:

reacting said first compound with a substituted aryldiazosulfonate, having a substituent other than a diazo group which reacts with at least one of the functionalities of said first compound, in a sufficient amount to provide a product having the desired degree of substitution and obtaining a diazosulfonate substituted first compound;

combining said diazosubstituted first compound with said second compound in the presence of sufficient light to activate the diazosulfonate to maintain a relatively low concentration of reactive diazosulfonate, wherein the reactive diazosulfonate reacts with said second compound to provide a compound having at least one of said second compound linked to one of said first compound.

3,843,448

BLEOMYCINIC ACID AND PROCESS FOR PREPARING THEREOF

Hamao Umezawa, Yasushi Takahashi, Tadashi Shirai, and Akio Fujii, Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kai, Tokyo, Japan

Filed May 11, 1972, Ser. No. 252,252

Claims priority, application Japan, May 15, 1971, 46/32,232

Int. Cl. C12b *1/00*

U.S. Cl. 195—81 6 Claims

1. A process for preparing a bleomycin which comprises hydrolyzing bleomycin in the presence of a strain of Fusarium genus or Helminthosporium genus and reacting with an amine, wherein the strain of the Fusarium genus is *Fusarium roseum* Link emend Snyder et Hansen, ATCC 20352, or ATCC 20355, or *Fusarium anguioides* Sherbakoff, ATCC 20351, and the strain of the Helminthosporium genus is *Helminthosporium zonatum* Ikata et Yoshida, ATCC 20353 or ATCC 20354.

3,843,449

OXAMICETIN AND PROCESS FOR ITS PRODUCTION

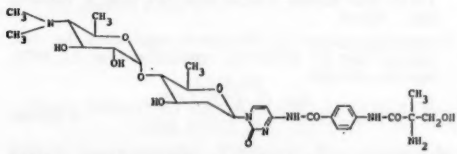
Hiroshi Kawaguchi, Tokyo, Masataka Konishi, Yokohama, and Koji Tomita, Kawasaki, Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed June 22, 1972, Ser. No. 265,402

Int. Cl. C12d *13/02*

U.S. Cl. 195—96 2 Claims

1. A process for preparing a biologically active substance, oxamicetin, characterized by the structure



which comprises cultivating *Arthrobacter oxamicetus*, ATCC 21788, in an aqueous carbohydrate media containing a nitrogenous nutrient until substantial antibiotic activity is produced in said media.

3,843,450

MAGNETICALLY RESPONSIVE, BIOLOGICALLY ACTIVE SUBSTANCE AND ASSOCIATED METHODS

Rolf Saxholm, Box 3, Billingstad, Norway

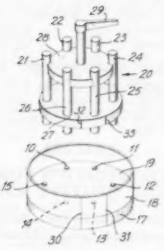
Continuation-in-part of abandoned application Ser. No. 705,539, Feb. 14, 1968. This application June 25, 1971, Ser. No. 156,738

Claims priority, application Norway, Feb. 16, 1967, 166,874

Int. Cl. C12k *1/04, 1/10*

U.S. Cl. 195—99 29 Claims

1. An article for carrying out microbiological and similar biochemical examinations, said article comprising a test dose of an antibiotic substance whose reactivity with a microorganism in a medium in which the test dose is brought into contact is the subject of investigation, a carrier for said test dose, said carrier being inert to said antibiotic substance, and metallic magnetically responsive means disposed on and supported by said carrier and intact with the carrier as a unitary body for pressing the carrier into substantially uniform contact with the medium under the action of an external magnetic field so



that the test dose is brought into contact with said medium, said magnetically responsive means being dimensioned and proportioned relative to said carrier to provide a pre-determined operative contact pressure between the carrier and the medium under the influence of the external magnetic field, the amount of magnetically responsive means being only a very small fraction of that required to achieve the same said contact pressure by its added weight.

3,843,451

MICROORGANISM PRODUCTION

David Stewart Roberts, Keston, England, assignor to Burroughs Wellcome Co.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,309

Claims priority, application Great Britain, Aug. 20, 1970, 40,260/70

Int. Cl. C12k *1/10*

U.S. Cl. 195—102 11 Claims

1. A method for the cultivation of *Fusiformis nodosus* which comprises culturing the organism under anaerobic conditions in a vessel which contains a liquid nutritive medium containing in solution crude trypsin or a digest of pancreas, and also containing in solution a liver ingredient selected from a liver digest, a liver extract or a liver infusion.

3,843,452

MICROBIOLOGICAL TEST ARTICLE

Ronald Freake and Billy Harper Haden, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

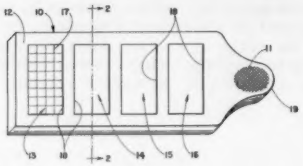
Filed Apr. 26, 1972, Ser. No. 247,751

Int. Cl. C12b *1/04*

U.S. Cl. 195—103.5 7 Claims

1. In an article of manufacture for use in microbiology comprising an absorbent web having a substantially flat surface and a microporous membrane overlaying at least a portion of said surface, which article is for use in microbiological applications wherein a microorganism is contacted with the surface of said microporous membrane, the improvement wherein said membrane has a mean pore size greater than about 0.01 micrometers while small

enough to prevent passage of said microorganism therethrough and said web and membrane being joined by a



continuous interface therebetween, integral therewith, and comprising a composite of the web and membrane.

3,843,453

PROCESS AND COMPOSITION FOR USE IN MICROBIOLOGICAL QUALITY ASSURANCE

Ronald Freake, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 93,482, Nov. 27, 1970. This application Mar. 2, 1973, Ser. No. 337,407

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R 8 Claims

1. A process for determining the consistency and quality of microbiological growth supporting media, which comprises contacting said medium with a composition comprising a predetermined quantity of a microorganism capable of producing colonies in or on said medium, said predetermined quantity being at least the minimum inoculum required to produce observable colony formation under predetermined conditions of incubation, and a microbiologically inert colloidal suspending agent, incubating said medium and said composition under predetermined conditions and observing the number of microbiological colonies thus produced.

3,843,454

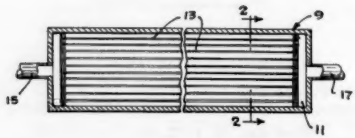
FLOW THROUGH TISSUE CULTURE PROPAGATOR

Ronald Eugene Weiss, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed July 31, 1972, Ser. No. 276,616

Int. Cl. C12b *1/04*

U.S. Cl. 195—127 11 Claims



1. An apparatus for propagating tissue culture cells comprising a vessel adapted for holding liquid culture medium, said vessel having a pair of opposite vertical walls at opposite ends of a first horizontal dimension thereof and a plurality of vertical walls transverse to said opposite vertical walls, said vessel having disposed therein a plurality of stacked, spaced-apart plates formed by a continuous strip of undulated material and adapted to provide surfaces to which cell growth can attach,

said plates each spaced from said pair of opposite vertical walls of said vessel to thereby form first and second vertical channels within said vessel at said opposite ends of said first horizontal dimension thereof,

an inlet conduit into said vessel opening directly into said first vertical channel; and

an outlet conduit from said vessel exiting directly from said second vertical channel.

3,843,455

APPARATUS AND TECHNIQUE FOR PRESERVATION OF ISOLATED ORGANS THROUGH PERFUSION

Milan Bier, 5341 E. 7th St., Tucson, Ariz. 85711

Filed Sept. 13, 1972, Ser. No. 288,499

Int. Cl. C12k *9/00*

U.S. Cl. 195—127 9 Claims

1. Apparatus for preservation of isolated viable organs by hypothermic perfusion, comprising an organ holding chamber, pumping means for circulating of a perfusate having a first conduit for administering perfusate to an artery of an organ contained in the chamber and a second conduit in communication with said first conduit and with the interior of said chamber for supplying perfusate over the outer surface of said organ, valve means for regulating the pressure of said perfusate being administered to said organ, heat exchanger means for cooling the perfusate, a gas-liquid film contact oxygenator contained in said chamber, said oxygenator comprising at least one inclined flat hydrophilic surface positioned to receive effluent from said organ and perfusate supplied by said second conduit, and means for supplying oxygen containing gas to the interior of said chamber for contact with perfusate on said hydrophilic surface.

3,843,456

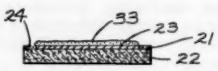
DEVICE FOR IMPLEMENTING THE DELIVERY, STORAGE AND USE OF MICROORGANISMS

Billy Harper Haden, 613 French Road, Rochester, N.Y. 14618, and Ronald Freake, Box 343, R.R. 2, Elkhart, Ind. 46514

Continuation-in-part of abandoned application Ser. No. 93,231, Nov. 27, 1970. This application Mar. 22, 1973, Ser. No. 343,908

Int. Cl. C12k *1/10*

U.S. Cl. 195—139 9 Claims



1. A device for use in determining the quality of microbiological growth supporting media and in implementing the quantitative delivery, storage and use of microorganisms comprising a microporous membrane having deposited on at least one surface thereof the dried residue of an aqueous suspension of a predetermined quantity of at least one variety of microorganism, a nutrient material in an amount sufficient to preserve the viability of said microorganism while insufficient to promote the formation of observable colonies, and a microorganism suspending quantity of a microbiologically inert colloidal suspending agent and having a porosity sufficiently small to prevent the passage of said microorganism therethrough while sufficiently large to allow nutrients and other chemical solutions to pass through and contact said microorganism.

3,843,457

MICROWAVE PYROLYSIS OF WASTES

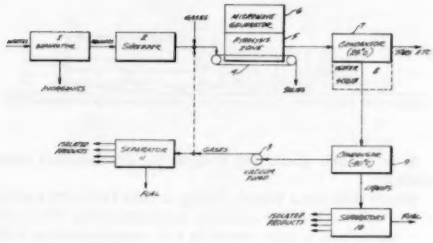
Edward A. Grannen, Upland, and Leon Robinson, Diamond Bar, Calif., assignors to Occidental Petroleum Corp., Los Angeles, Calif.

Filed Oct. 14, 1971, Ser. No. 189,228

Int. Cl. C10b *49/00*

U.S. Cl. 201—2.5 **9 Claims**

1. A process for recovering vaporizable organic compounds from solid waste containing organic materials which comprises the following steps:



passing a gaseous stream through a microwave discharge zone; the pressure of the gaseous stream in said zone being from about 0.1 mm. of mercury to below about atmospheric pressure; the temperature of said zone being between about ambient temperature and less than about 200° C.;

passing comminuted solid waste containing organic materials through said zone; and

subjecting the gaseous stream and the comminuted wastes in said zone to microwave discharge to ionize the gases in the stream and form vaporizable high reactive fragments of the organic materials which become entrained in the flowing gaseous stream, wherein interactions occur between the ionized gases and reactive fragments.

3,843,458

COAL TREATING METHOD AND APPARATUS FOR COKE PLANTS

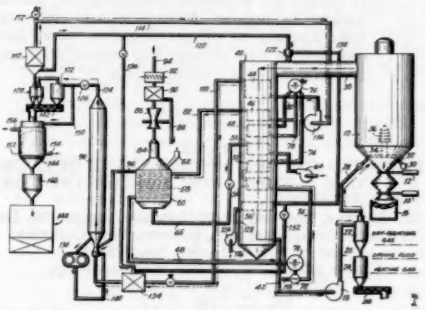
Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 224,154, Feb. 7, 1972, now Patent No. 3,728,230. This application Apr. 13, 1973, Ser. No. 350,961

Int. Cl. C10b *39/02*

U.S. Cl. 201—39 **20 Claims**

1. In a method of operating a coke plant, feeding pulverized coal into a coal dryer, directing a hot drying gas at a first given temperature upwardly through the coal dryer and suspending the pulverized coal in the upwardly flowing drying gas to form a fluidized bed, circulating a drying fluid through coils in the fluidized bed for further drying the coal by contact with the coils, heating the drying fluid circulated through the coils at least indirectly with heat extracted from hot coke shortly after the coke is discharged from a coke oven, transporting dry coal at a second given temperature from the coal dryer into a heater, exposing the dry coal in the heater to a heating gas at a temperature substantially higher than said first and second given temperatures after preliminarily heating the latter gas with heat extracted from the hot coke, and



delivering the dry, heated coal to a coke oven so that the coal is received at the oven in a dry, preheated condition.

3,843,459

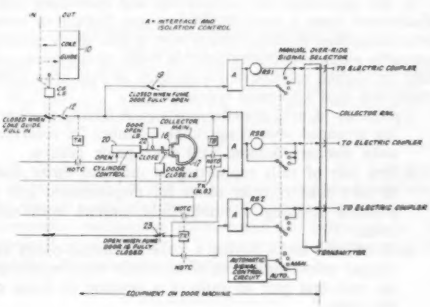
SYSTEM AND METHOD FOR CONTROLLING EMISSIONS WHILE PUSHING COKE FROM A COKE OVEN

Vincent G. Krenke, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Mar. 19, 1973, Ser. No. 342,723

Int. Cl. C10b *33/00*

U.S. Cl. 201—41 **9 Claims**



1. In a system for conducting effluent emitted during pushing of coke from a coke oven chamber through a closed coke guide having a hood that conveys said effluent toward a collecting main, which internally is under a partial vacuum or negative pressure, and which has a plurality of pivotable doors, with one such door being disposed opposite each respective coke oven chamber, the improvement in such system comprising:

(a) a system for controlling the movement of the door in said main located opposite an oven to be pushed including:

(i) switch means that is actuated when said coke guide forms a closed flow path for the effluent between said hood and the collecting main;

(ii) means acting responsively to a signal generated when said switch is actuated for decreasing the amount of said vacuum or negative internal pressure in said collecting main;

(iii) means opening said door in timed sequence after said internal vacuum or negative pressure has been decreased; and

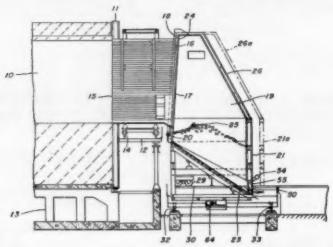
(iv) means for thereafter increasing the partial vacuum or negative pressure in said collecting main whereby the effluent emissions created during pushing flow through said opened door and the hood into said collecting main.

3,843,460

APPARATUS FOR TRANSPORTING AND QUENCHING COKE PUSHED FROM HORIZONTAL COKING CHAMBERS

Erich E. Pries, Bochum, West Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, West Germany

Filed July 25, 1972, Ser. No. 275,093
Claims priority, application West Germany, Aug. 20, 1971, P 21 41 696.6
Int. Cl. C10b *39/12*
U.S. Cl. 202—230 8 Claims



1. An apparatus for transporting and quenching coke discharged from a horizontally-arranged battery of coke oven chambers, in combination with a coke guide grating movable along a charging floor in front of the oven and into an aligned relationship with each of said coke oven chambers, said apparatus comprising:

a plurality of coke transfer tanks each having an opening arranged toward said coke chamber for receiving coke discharged from said coke guide grating,

a first pair of rails supporting at different times each of said coke transfer tanks for displacement into a position forming a smoke-tight contact with said oven,

each of said tanks having a coke discharge outlet arranged below the hearth of said oven when supported by said first pair of rails at a position in front of the oven,

a car supporting said first pair of rails and one of said coke tanks,

a second pair of rails supporting said car for movement along said battery of coke oven chambers,

a plurality of third rail sections arranged remotely from said coke oven chamber and in a selectively alignable relation with said first pair of rails supported by said car,

a quenching chamber at each of said third rail sections arranged for receiving coke discharged from one of said coke tanks while supported on one of said third rail sections,

means forming a smoke-tight connection between a coke transfer tank and a quenching chamber during the discharging of coke into the quenching chamber,

a coke conveying chute in each of the quenching chambers for transporting coke discharged from one of said coke transfer tanks when arranged in a smoke-tight relation with one of the quenching chambers,

controlled water sprinklers in each of the quenching chambers for cooling coke, said controlled water sprinklers being arranged above said coke conveying chute, and

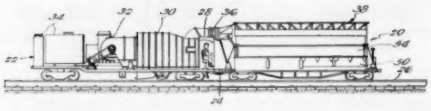
a vibrating conveyor for advancing coke while it is quenched.

3,843,461

COKE QUENCHING SYSTEM

John E. Allen, Lake Forest, Ill., assignor to Interlake, Inc.

Filed Apr. 7, 1971, Ser. No. 132,128
Int. Cl. C10b *39/04*
U.S. Cl. 202—227 9 Claims



1. In a coke quenching system, the combination comprising:

means defining a vehicle having a coke receiving cavity, a coke admitting opening communicating with said cavity and a coke releasing exit communicating with said cavity, and adapted to travel between a coke receiving station, a coke quenching station and a coke dumping station;

a hood over said coke receiving cavity and adjacent one side of said coke receiving opening, said hood including an elongated duct having an elongated opening facing said coke receiving cavity and a plurality of individual louvers in said elongated opening, each said louver being movably mounted for movement between open and closed positions, each said louver being movable independently of the others of said louvers;

exhaust means in fluid communication with said hood for withdrawing gases within said coke receiving cavity; and

means mounted on said hood adjacent said coke receiving opening for generating a fluid barrier across said opening whereby gases emanating from coke received in said cavity may exit the vehicle substantially only through said hood.

3,843,462

HOT BALL DESALINATION PROCESS

John R. Phillips, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 58,471, July 27, 1970. This application Nov. 22, 1972, Ser. No. 308,773
Int. Cl. B01d *1/26, 3/02, 3/00*
U.S. Cl. 203—11 14 Claims

1. A process for recovering potable water from saline solutions such as seawater and other brackish waters in a pressurized flash distillation system comprising:

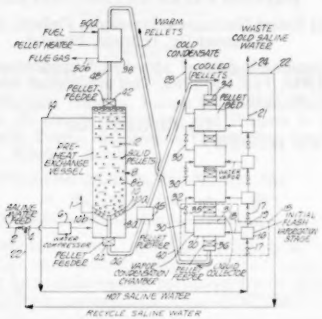
(a) pressurizing the saline water to a pressure that will insure that the saline water will remain liquid during heating of the saline water;

(b) heating a stream of the pressurized relatively cool saline water to at least the flash distillation temperature of the initial flash distillation stage by countercurrently flowing heated a moving stream of pellets through the stream of saline water, the saline water being pressurized throughout the zone of contact with the pellets and remaining liquid;

(c) separating the exiting, thus relatively cooled pellets from the stream of heated saline water;

(d) transferring said stream of heated saline water free of pellets to the initial flash distillation stage, said stream having been heated to the flash distillation temperature in step (b);

(e) partially reducing the pressure and temperature of said stream of heated saline water in the flash distillation stage to flash distill water vapor from said stream;

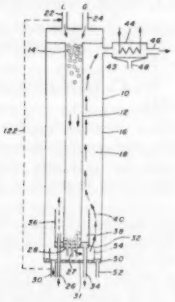


(f) condensing the water vapor produced by the distillation on the surfaces of the separated relatively cooled pellets;

(g) removing and collecting the condensate from the surfaces of the pellets; and

(h) reheating the pellets from a source external to said system for recycling through the system as the heated pellets of step (b).

3,843,463
EVAPORATIVE METHOD
Melvin H. Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 206,086, Dec. 8, 1971. This application Oct. 30, 1972, Ser. No. 301,891
Int. Cl. B01d *3/34*
U.S. Cl. 203—49 **32 Claims**



1. In the method of treating a liquid feed comprising a more volatile and a less volatile fraction to separate said fractions, the steps comprising

(1) moving said liquid feed vertically through a substantially vertical evaporation chamber having therewithin a condition of substantially progressively increasing temperature in the direction of said liquid feed movement and moving concurrently therewith and in contact therewith a carrier gas thereby to progressively heat said liquid and said gas media to cause evaporation of the more volatile fraction from said liquid and enrichment of said carrier gas in vapor of said more volatile fraction;

(2) heating the most advanced portions of said evaporation chamber and the fluid media therewithin to the highest temperature within said increasing temperature condition exclusively with externally derived heat energy;

(3) moving the vapor enriched carrier gas from the exit of said evaporation chamber through a condensation chamber countercurrently with respect to the flow in the evaporation chamber and in heat transfer relationship with portions of said evaporation chamber preceding said most advanced portions to progressively cool said vapor enriched carrier gas and condense vapor therefrom and to progressively heat the fluid media moving within said preceding portions of said evaporation chamber;

(4) said externally derived heat energy in said step (2) being provided additionally to and at a temperature higher than the heat contained in said vapor enriched carrier gas moved through said condensation chamber in said step (3);

(5) said heating of said most advanced portions of said evaporation chamber in said step 2 and said heating of preceding portions thereof in said step 3 providing and maintaining said substantially progressively increasing temperature condition within said evaporation chamber;

(6) removing said carrier gas from said condensation chamber.

3,843,464
METHOD FOR TREATMENT OF METALLIC SURFACE
Shoji Usami, Sayama, and Haruo Kozu, Fujisawa, Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken, Japan
No Drawing. Filed Nov. 14, 1972, Ser. No. 306,304
Claims priority, application Japan, Nov. 16, 1971, 46/91,657
Int. Cl. C12b *1/00*
U.S. Cl. 195—2 **6 Claims**

1. A method for treating a metallic surface comprising the step of contacting the metallic surface with a cultured suspension containing micro-organism belonging to a genus of thiobacillus at a temperature in the range of 20 to 45° C. in an aerobic culture condition.

3,843,465
PRODUCTION OF CITRIC ACID FROM HYDROCARBONS
Helmut Hustede and Diethelm Siebert, Ladenburg, Germany, assignors to Joh. A. Benckiser G.m.b.H.
No Drawing. Filed Mar. 16, 1973, Ser. No. 342,103
Claims priority, application Germany, Nov. 10, 1972, P 22 12 929.9
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **16 Claims**

1. A process for the manufacture of citric acid, or its salts from hydrocarbons by fermentation using yeast which comprises fermenting an aqueous nutrient medium with a yeast, said medium comprising a *n*-paraffin having about 9 to 20 carbon atoms in the presence of a decoupling chemical capable of supressing the oxidative phosphorylation without affecting the electron-transport system of the respiratory system of the yeast, said yeast being capable of growth in the presence of a high concentration of an aconitase-suppressing compound.

3,843,466

METHOD OF PRODUCING DICARBOXYLIC ACIDS BY FERMENTATION

Shiro Akabori, Tokyo, Isamu Shiio, Kamakura, and Ryosuke Uchio, Yokohama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 215,417, Jan. 4, 1972, which is a continuation-in-part of application Ser. No. 87,309, Nov. 5, 1970, both now abandoned. This application Oct. 5, 1973, Ser. No. 403,924

Claims priority, application Japan, Nov. 10, 1969, 44/89,959

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R 6 Claims

1. A method of producing an α,ω-n-alkanedioic acid having a carbon chain of 12 to 18 carbon atoms which comprises:

(a) contacting a compound having a straight carbon chain and the formula

$$R—C_nH_{2n-m}—R'$$

in an aqueous medium under aerobic conditions with an enzyme of *Candida cloacae* FERM P–736 until said alkanedioic acid is accumulated in said medium; and

(b) recovering the accumulated alkanedioic acid from said medium, (1) in said formula R being methyl, methylol, formyl, or carboxyl; R′ being methyl, methylol, formyl, or carboxyl; R′ being methyl, methylol, or formyl; *n* being an integer between 10 and 16; and *m* being two or zero.

3,843,467

PROCESS FOR PRODUCING PROSTAGLANDINS

Robert C. Skarnes, Sudbury, and Lucille A. Howard, Framingham, Mass., assignors to Worcester Foundation for Experimental Biology, Inc., Shrewsbury, Mass.

No Drawing. Filed May 9, 1973, Ser. No. 358,710

Int. Cl. C12d *1/02*

U.S. Cl. 195—29 8 Claims

1. A process for the biosynthesis of prostaglandins, comprising the steps of

(a) growing the bacterium *Pseudomonas aeruginosa* in the presence of oxygen in a culture medium essentially free of fatty acids and containing available nitrogen and carbon therby to form prostaglandins; and

(b) isolating the product prostaglandins thus formed.

3,843,468

METHOD AND APPARATUS OF A TWO ZONED, LIQUID LEVEL CONTROLLED SCREENING AND FEEDING DEVICE FOR CELLULOSE DIGESTION

Oliver A. Laakso, Glens Falls, N.Y., assignor to Kamyr Inc., Glens Falls, N.Y.

Filed Mar. 12, 1973, Ser. No. 339,761

Int. Cl. D21c *7/00, 7/06, 7/12*

U.S. Cl. 162—17 7 Claims

1. A method for continuous cellulose digestion comprising: Pumping a suspension of finely comminuted fiber material and a digesting liquor from a charging valve to a screening device placed at the top of a digester; draining the liquid from the fiber material in the screening device in separate first and second zones, the second zone being above the first zone to control the liquid level in the screening device; transferring the fiber material by means of a feeding screw to a steam-filled space in the top of the digester after draining the liquid therefrom; recirculating the portion of the liquid drained off by said screening device in said first zone and feeding said portion to said charging valve, removing the second portion of liquid drained off by the screening device in said second zone, heating this removed second portion and supplying said second portion to the digester.

3,843,469

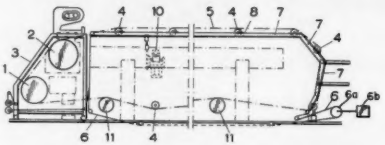
DEVICE FOR CHANGING WIRES ON FOURDRINIER PAPERMAKING MACHINE

Mauri Kelevi Naumanen, Jyvaskyla, Finland, assignor to Valmet Oy, Helsinki, Finland

Continuation-in-part of abandoned application Ser. No. 801,995, Feb. 25, 1960. This application June 4, 1971, Ser. No. 149,987

Int. Cl. D21f *1/00*

U.S. Cl. 162—273 3 Claims



1. An endless wire changing device for papermaking machines having a wire section, the device comprising a wire suction roll, a wire forward roll adjacent said wire suction roll, a wire extending over said rolls, a plurality of wire poles engaging and pressing said wire to cause said wire to form a loop, a movable wire changing carriage having means releasing said wire poles, parallel guides located within the region of said loop and supporting said wire poles, said wire poles sliding in said guides, a traction conveyor carrying said wire poles, means driving said traction conveyor in two directions and means extracting said wire poles.

3,843,470

FLEXIBLE TRAILING ELEMENTS IN A PAPERMAKING MACHINE HEADBOX HAVING PROJECTIONS THEREON EXTENDING INTO THE SLURRY FLOW

Raymond A. Betley and Ralph A. Beck, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Continuation-in-part of abandoned application Ser. No. 68,350, Aug. 31, 1970. This application Nov. 21, 1972, Ser. No. 308,555

Int. Cl. D21f *1/02, 1/06*

U.S. Cl. 162—343 12 Claims

1. In a headbox construction for delivering stock to a forming surface, the combination comprising:

a slice chamber for receiving stock from a headbox chamber and being tapered in a downstream direction;

a slice opening leading from the chamber for discharging stock flowing through the chamber onto a traveling forming surface;

a plurality of flexible trailing sheet form elements each extending in a cross-machine direction and being separated to form flow passages therebetween;

a plate member having stock flow openings therethrough located at the upstream end of the slice chamber and supporting the upstream ends of the trailing elements,

the upstream ends of the trailing elements being anchored to said plate member and the down-

stream ends being unattached and self-positionable so as to be solely responsive to forces exerted thereon by the stock flowing toward the slice;

and a plurality of projections on the surface of said trailing elements substantially uniformly spaced thereon projecting into the flow stream which flows past the trailing elements increasing the surface area of the trailing elements exposed to the stock flow stream.

3,843,471

TOP ACTUATED REACTOR CONTROL SYSTEM

Frank Bevilacqua, Windsor, Joseph R. Dietrich, Hartford, Malcolm D. Groves, Simsbury, and William S. Flinn, Bloomfield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,308

Int. Cl. G21c *7/16*

U.S. Cl. 176—36 R **10 Claims**

1. In a nuclear reactor, the reactor including a pressure vessel with a fuel assembly disposed therein and means for circulating a coolant under pressure through the vessel, the fuel assembly comprising a plurality of fuel elements containing fissionable material, an improved control system comprising:

a plurality of guide tubes for movable neutron absorber elements extending through the fuel assembly, said guide tubes terminating within the pressure vessel;

upper end filtering means, the upper end of each guide tube being terminated in said upper end fitting means, said upper end fitting means including a tubular extension for each guide tube, the upper end of said tubular extensions defining valve seats;

buffer means positioned in the pressure vessel above and axially aligned with each of said end fitting means tubular extensions;

tubular hydraulic cylinder defining means extending between the upper end of each of said tubular extensions and said buffer means;

actuator piston means disposed for movement in each of said tubular cylinder defining means, each of said actuator piston means having an upper surface cooperating with said buffer means for valving action and a lower surface cooperating with said upper end fitting means defined valve seat to perform a valving action;

neutron absorber element means disposed for movement in each of the guide tubes;

means mechanically coupling each of said actuator piston means to associated absorber element means whereby the absorber element means may be moved relative to the fuel elements;

means located externally of the pressure vessel for generating a control pressure;

a plurality of control lines penetrating the pressure vessel, said control lines being commensurate in number with the actuator piston means and extending from said control pressure generating means to respective of said buffer means for permitting the application of said control pressure to the upper surfaces of said actuator piston means;

valve means disposed in each of said control lines for selectively applying said control pressure to said hydraulic cylinder defining means through said buffer means to said upper surface of said actuator piston means whereby said absorber elements may be individually adjusted between positions commensurate with full insertion into and full retraction from the fuel assembly; and

means for applying the pressure vessel internal coolant pressure to the lower surfaces of said actuator piston means.

3,843,472

METHOD OF STRENGTHENING AN EDGE OF A GLASS ARTICLE AND ARTICLE WITH STRENGTHENED EDGE

François Toussaint, Montignies-le-Tilleul, Pierre Laroche, Marcinelle, Jean Schottey, Montignies sur-Sambre, and Emmanuel Lambert, Brussels, Belgium, assignors to Glaverbel S.A., Watermail-Boitsfort, Belgium

Filed June 1, 1971, Ser. No. 148,847

Claims priority application Great Britain, May 21, 1971, 16,285/71

Int. Cl. C03c *27/12, 15/00, 21/00*

U.S. Cl. 161—199 **16 Claims**

1. A method of strengthening at least a portion of an edge of an article of glass comprising the steps of: abrading the surface of at least a portion of an edge of said article of glass for smoothening said surface; and, after said step of abrading, (a) subjecting the smoothened surface of the edge to a rectifying treatment which includes the contacting of at least the smoothened portion of said edge with a medium containing fluorine atoms in order to reduce the occurrence, on that surface, of flaws liable to cause stress concentrations when said edge is subjected to tensile loading and (b) chemical tempering the smoothened surface of the edge; and, preventing said medium from contacting certain portions of the surface of the article by, prior to said step of subjecting the smoothened surface of the edge to a rectifying treatment, placing a shield member over each portion of the surfaces of the article with which contact with said medium is not desired and providing a liquid film between each such shield member and the underlying surface portion to be shielded.

3,843,473

IMPREGNATION OF CELLULOSIC PULP UNDER SUPERATMOSPHERIC PRESSURE WITH WASTE ALKALINE OXYGEN GAS BLEACHING LIQUOR FOLLOWED BY OXYGEN-ALKALI BLEACHING

Hans Olof Samuelson, Goteborg, and Ingemar Liss-Albin Croon, Domsjoverken, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of application Ser. No. 173,764, Aug. 23, 1971, now Patent No. 3,759,783. This application Mar. 23, 1973, Ser. No. 344,291

Claims priority, application Sweden, Mar. 30, 1972, 4,251/72

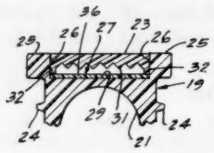
The portion of the term of the patent subsequent to Sept. 18, 1990, has been disclaimed

Int. Cl. D21c *9/10*

U.S. Cl. 162—40 **19 Claims**

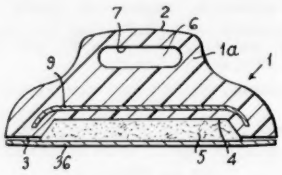
1. In the bleaching of cellulose pulp by the alkaline oxygen gas process, in which a gas containing oxygen is introduced into the pulp in the presence of alkali, which can be selected from the group consisting of sodium hydroxide and sodium carbonate and which optionally may contain sodium sulfide, the improvement which comprises first impregnating under superatmospheric pressure cellulose pulp obtained from a continuous pulping or digestion process and containing spent pulping liquor with waste alkaline oxygen gas bleaching liquor in order to displace a major proportion of the pulping chemicals from the cellulose pulp but retain a minor proportion of such chemicals, and then impregnating under superatmospheric pressure the resulting pulp with alkali to be employed in the alkaline oxygen gas bleaching.

3,843,474
ACRYLIC REFLEX REFLECTOR AND SEALING MEANS THEREFOR
Gerald Golden, Highland Park, Charles V. Wrobel, Jr., Arlington Heights, and Walter Dian, Downers Grove, Ill., assignors to Excel Incorporated, Franklin Park, Ill.
Original application May 4, 1971, Ser. No. 140,148, now Patent No. 3,755,050. Divided and this application Aug. 15, 1972, Ser. No. 280,847
Int. Cl. B44f 1/02
U.S. Cl. 161—4 2 Claims



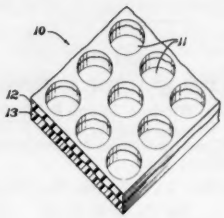
1. An acrylic reflex reflector having internal prismatic reflective facets and marginal ribs extending thereabout providing flat surfaces terminating in a common plane, a strip of acrylonitrile-butadiene-styrene copolymer extruded with a vinyl base, such as an extruded pedal tread, said strip of copolymer extruded with the vinyl base being engaged by the flat surfaces of said ribs with said facets in spaced relation with respect to said strip and being sealed to the flat surfaces of said ribs, said reflector being positively held to the vinyl base solely by the seal between said reflector and strip of plastic material.

3,843,475
PLASTICS TRIM STRIPS
Cecil Kent, Woking, England, assignor to Creators Limited, Surrey, England
Filed Feb. 10, 1972, Ser. No. 225,038
Claims priority, application Great Britain, Feb. 15, 1971, 4,683/71
Int. Cl. B60r 13/04; E04f 19/02
U.S. Cl. 161—4 3 Claims



1. A decorative trim comprising a strip of synthetic resin plastics material having at least one longitudinal hollow passage therethrough extending the length of the trim strip, a decorative material within said passage in the form of a colored coating spread over the wall surface of the passage, and a strip of foil presenting a metallic appearance embedded in said plastics strip behind said at least one passage, at least the plastics material in front of said at least one passage and said foil strip being transparent or translucent so that said decorative material and said foil strip are visible through the front surface of the strip, that is to say that surface which is exposed when the trim strip is fixed in position.

3,843,476
PERFORATE ARTICLE AND METHOD OF MAKING SAME
James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed May 19, 1972, Ser. No. 255,131
Int. Cl. B32b 3/10
U.S. Cl. 161—112 2 Claims



1. A molded perforate article comprising:
(a) a base layer formed of high molecular weight polyethylene having a low melt flow index;
(b) a cover layer formed of vulcanized elastomeric material;
(c) the melting temperature of the polyethylene being less than the vulcanizing temperature of the elastomeric material and the materials being subjected during molding to a temperature sufficient for vulcanizing the said elastomeric material so that the latter is integrally united with said base layer at the interface of the materials by mutual penetration of each into the other at the same interface while both materials were in hot plastic condition during the molding;
(d) said base layer having its thickness in the range of ⅓ to ½ of the overall thickness of said article; and,
(e) the perforations of said article being tapered with the larger dimension of each opening being at the outer surface of said base layer.
less than 0.15 measured in accordance with the test procedures of ASTM 1238–65T modified with a supplementary load of 3 kg.

3,843,477
ARCUATE WIRE ASSEMBLY COATED WITH PLASTIC
David L. Rowland, 49 W. 55th St., New York, N.Y. 10019
Original application Mar. 22, 1971, Ser. No. 126,563, now Patent No. 3,767,261. Divided and this application July 3, 1972 Ser. No. 268,907
Int. Cl. B32b 1/00
U.S. Cl. 161—125 17 Claims

1. An assembly useful as a seating member or back member when installed on a frame, comprising:
a series of arcuate, continuous, sinuous spring metal wires, each having two ends, each said wire closely approaching each of its immediately adjacent said wires at frequent intervals, and
a thin sleevelike plastic coating surrounding said wires, following their sinuosity and joining them together where they closely approach each other, said approaches being close enough for effective bridging between them by said coating, said plastic coating having a Shore A durometer in the range of 45 to 90, the thickness of said coating being from about one-fifth of the wire thickness to about equal to the wire thickness,
whereby said wires and plastic coating comprise a unitary assembly defining a cylindrical arc which is

intended to be flattened somewhat when said assembly is installed on a said frame, thereby placing the springs in tension along a flatter cylindrical arc,

said coating constituting the sole means holding said assembly together,

said spring metal wires having a silhouette area of between about 17% and about 75% of the area of said assembly, the empty space between the coated wires occupying from about 2% to about 75% of the area of the assembly.

3,843,478
MATTE FINISH FILM

Edward J. Zuscik, Apeldoorn, Netherlands, assignor to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,616
Int. Cl. B32b *33/00*
U.S. Cl. 161—164 **11 Claims**

1. A composite film having an overall thickness of between about 0.75 and about 10 mils and comprising two coextruded layers, one layer being an outer layer of a ethylene-propylene block copolymer having an ethylene content of from 3 to about 25% by weight of the copolymer, said outer layer having a thickness between about 0.02 and about mil and a non-embossed matte surface having a surface gloss of less than 10%, the other layer being a layer of one other synthetic thermo-plastic polymer.

3,843,479
COMPOSITE FILM

Koichi Matsunami and Ikuya Hayashi, Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,811
Claims priority, application Japan, Dec. 29, 1970, 46/128,180, 46/128,181
Int. Cl. B32b *27/08, 27/34, 27/32*
U.S. Cl. 161—165 **11 Claims**

1. A composite film comprising (A) a biaxially drawn film of a polyamide containing in the molecule not less than 70% (mol) of the repeating unit consisting of metaxylylenediamine or its mixture with paraxylyenediamine, wherein the paraxylylenediamine content is not more than 30% (mol) on the basis of the total amount of methaxylylenediamine and paraxylylenediamine, and an α,ω-aliphatic dicarboxylic acid having 6 to 10 carbon atoms and (B) a layer of a thermoplastic resin having a melting point or a softening point at least 50° C. below the melting point or the softening point of the polyamide provided on at least one surface of the biaxially drawn film;

the biaxially drawn film having the following physical constants:

(7) Yield elongation: 2 to 6% in machine and transverse directions;

and the composite film having the following physical constant:

(8) Gas transmission rate (at 30° C.): not more than 50 ml./m.^{2} 24 hr. atm.

3,843,480
DRY DRY TRANSFER

Donald F. Dreher, P.O. Box 56, East Brookfield, Mass. 01515

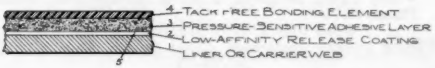
Continuation of application Ser. No. 687,532, Dec. 4, 1967, which is a continuation-in-part of application Ser. No. 327,312, Dec. 2, 1963, which in turn is a continuation of application Ser. No. 305,231, Aug. 28, 1963, all now abandoned. This application Dec. 10, 1971, Ser. No. 206,967
Int. Cl. B41m *5/02;* **C08c** *11/70*
U.S. Cl. 161—167 **11 Claims**

1. An article of manufacture described as a dry dry transfer element adapted to be combined laminarly with a flexible substrate such as paper, film and the like to form a pressure-sensitive adhesive laminate having an interface at the plane of conjunction,

(a) said transfer element comprising a composite adhesive layer and a supporting liner to which said layer is attached but from which it is separable cleanly following formation of said laminate,

(b) said composite layer including a pressure-sensitive adhesive composition, whose operable surface lies next adjacent said liner, and a disparate material which constitutes the obverse face of said transfer element designedly contiguous said plane of conjunction,

(c) said operable surface being pressure-sensitive and



inherently self-adherent to various objects upon contact,

(d) said disparate material being dry, substantially non-migrant to adjacent substances at normal ambient temperture and conditions of storage, and incorporable in said laminate proximate said interface,

(e) said obverse face being essentially tack-free to permit said transfer element to be wound into a roll and later to be unwound undisturbedly therefrom without adhesional restraint,

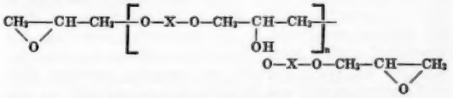
(f) and wherein at least one substance proximate said interface is activatable adhesionally to secure said layer to said substrate.

3,843,481
PLASTIC LAMINATE

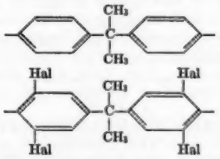
Klaus Hoheisel, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,833
Claims priority, application Germany, Oct. 21, 1971, P 21 52 364.8
Int. Cl. B22b *27/40*
U.S. Cl. 161—190 **13 Claims**

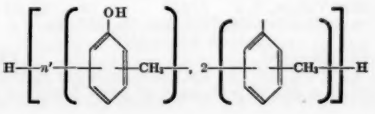
1. A laminate including a polyester base film having on at least one side, a film-like covering layer of an aromatic polyamide, polyamide-imide or polyimide and between the base film and the covering layer an intermediate layer of the reaction product of at least one aromatic polyisocyanate with at least one epoxide resin of the general formula



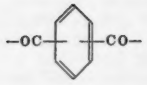
in which X is at least one radical of the formulae:



(Hal=Br or Cl),



and



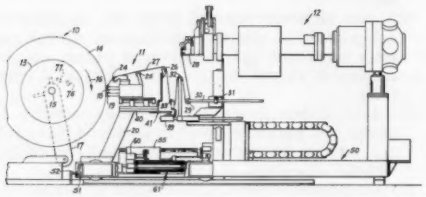
n is a number ≥ 10 and n' is a number from 2 to 8.

3,843,482

TIRE TREAD WINDING MACHINE HAVING A MECHANICALLY PROGRAMMED CONTROL SYSTEM

Jack Wireman, Yorba Linda, and Leslie A. Kosla, Mission Viejo, Calif., assignors to AMF Incorporated, White Plains, N.Y.

Filed May 1, 1973, Ser. No. 356,202
Claims priority application Great Britain, May 3 1972, 20,499/72
Int. Cl. B23d *31/00*; B29h *17/00, 17/02*
U.S. Cl. 156—350 21 Claims



1. In tire building apparatus having tire casing rotating means for rotating a tire casing in its plane, having ribbon applying means for applying an elastomeric ribbon to said casing as it is rotated and having mounting means for one of said rotating and applying means for rotating said one means around an axis substantially parallel to said plane, the combination therewith of second rotating means and programming means for controlling the azimuth position of said one means with respect to said axis, said second rotating means comprising reversible driving means connected to said mounting means for rotating said mounting means and hence, said one means, around said axis, and control means connected to said driving means for controlling the movement thereof, and said programming means comprising a plurality of spaced camming members engageable with said control means for actuating the latter and thereby causing movement of said driving means, moving means connected to at least one of said programming means and control means for producing relative movement in two transverse directions between said control means and said camming members for engaging successive ones of said camming members with said control means and stepping means operable by one of said casing rotating means, said applying means and said tire casing as said ribbon is applied to said casing and connected to said moving means for causing said relative movement as predetermined lengths of said ribbon are applied to said casing.

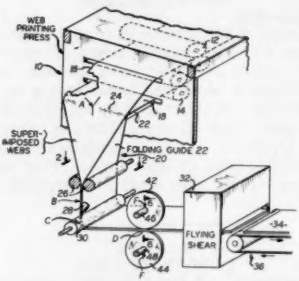
3,843,483

APPARATUS FOR WELDING PAPER ON WEB PRESS

Bernard T. Sendor, 608 Blair Drive, Westbury, N.Y. 11590, and Mortimer S. Sendor, 80—30 221st St., Queens Village, N.Y. 11427

Filed Jan. 28, 1972, Ser. No. 221,564
Int. Cl. B41j *13/58*
U.S. Cl. 156—380 9 Claims

1. A printing press having means by which legends are printed on a plurality of areas of paper travelling as a web with continuous motion through the press, one guide means that fold the web back on itself along a fold line to bring the printed areas into superimposed relation with one another as successive page of a publication and with corresponding edge portions of the pages in register with one another while the pages move with continuous motion, the printing press also including means for printing on a second web of paper, the printing means of the web press including printing stations each having a cylinder that rotates in contact with a web to print the legends on the travelling web, and other guide means for bringing the second web of paper into contact with the first web at a location to be inserted by said one guide means into nesting relation with the fold of the first web for providing additional pages of said publication in



register with the edges of the pages formed by the folding of the first web, means located along the course of movement of the registering edge portions of the paper pages including a welding station at a location where the paper webs are in contact with one another along said fold line and with printed areas of the different webs superimposed, the welding station having a heater located adjacent to said fold line adapted to weld the nested pages together only along said fold line as said edge portions pass said welding station, said heater being in position for heating corresponding registering edge portions and having a heat transfer rate coordinated with the speed of travel of the paper and a severing station to transversely cut superimposed webs into separate reproductions of the printed matter.

3,843,484

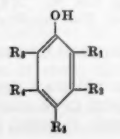
METHOD OF BONDING SYNTHETIC FIBROUS MATERIAL TO RUBBER USING AN AQUEOUS DISPERSION-TYPE ADHESIVE

Masaya Kamiyoshi, Masatoshi Gouda, and Naoya Kuramoto, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed June 20, 1972, Ser. No. 264,467
Int. Cl. B32b *25/02, 25/08*; C09j *5/00*
U.S. Cl. 156—335 8 Claims

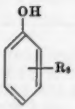
1. A method of bonding a synthetic fibrous material to rubber, which comprises coating a synthetic fibrous material with an aqueous dispersion comprising (A) a novolak resin derived from 1 mol of a monohydroxy benzene having two or more functional groups or its derivative selected from the group consisting of:

phenols of formula (1)



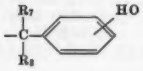
(1)

wherein each of R_1 through R_5 is a hydrogen atom, an alkyl group containing 1 to 15 carbon atoms, or a halogen atom, and at least two of R_1, R_3, and R_5 are hydrogen atoms; monohydroxy benzene derivatives of formula (2)



(2)

wherein R_6 is a group selected from a hydroxyphenol group and



wherein each of R_7 and R_8 is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms,

in which the ratio of the number of benzene rings to that of hydroxyl groups in the molecule is 1:1, and from 0.3 to 1 mol of formaldehyde, (B) 0.05 to 1 part by weight per part of said resin (A), of a resole-type precondensate derived from 1 mol of resorcinol and 1 to 6 mols of formaldehyde, and (C) ½ to 9 parts by weight per part by weight of the sum of said resin (A) and precondensate (B), of a rubber latex, curing the coating at a temperature of at least 100° C. but not higher than the softening point of the fibrous material, and bonding the fibrous material to an unvulcanized rubber material while vulcanizing.

3,843,485

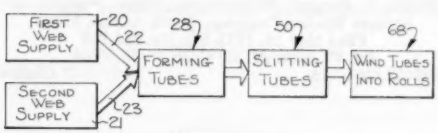
METHOD OF FORMING A STRETCHABLE TUBULAR PACKAGING MATERIAL

Gregory W. Doll and Grover C. Currie, Jr., Patterson, N.C., assignors to Cellu Products Company, Patterson, N.C.

Continuation-in-part of application Ser. No. 223,144, Feb. 3, 1972, which is a continuation-in-part of application Ser. No. 223,237, Feb. 3, 1972, both now abandoned. This application Sept. 7, 1972, Ser. No. 287,015

Int. Cl. B26d *7/06;* **B32b** *31/00*

U.S. Cl. 156—251 **4 Claims**



1. A method of producing a stretchable tubular packaging material from elongate flexible foam sheet material and which is adapted to receive and package articles therein, and comprising the steps of

advancing two sheets of flexible foam sheet material along a path of travel,

guiding the two advancing sheets of flexible foam sheet material into a contiguous overlying relationship to form overlying layers,

severing the two advancing overlying layers of sheet material along a plurality of parallel lines while simultaneously

fusibly uniting the thusly formed adjacent side edges of the two layers along each of the parallel lines to form the same into a plurality of elongated tubular members,

slitting the two advancing overlying layers of sheet material in a pattern of spaced apart rows of spaced incisions with the rows extending in a direction substantially parallel to the path of travel and with the incisions of adjacent rows being staggered,

spreading apart the two advancing layers of sheet material subsequent to the slitting step to break any mating relationship between the layers resulting from the slitting step, and then

winding each of the tubular members into a roll.

3,843,486

METHOD OF MANUFACTURING SANDWICH ELEMENTS

Karl Lennart Birger Johansson, Huskvarna, and Karl Oskar Wikholm, Habo, Sweden, assignors to Interwest General Corporation, Salt Lake City, Utah

Filed Apr. 21, 1971, Ser. No. 135,854

Int. Cl. B32b *31/00;* **B65c**

U.S. Cl. 156—276 **2 Claims**

1. A method of manufacturing sandwich elements, comprising the steps of spreading out a first layer of a mixture of solid particles and liquid resinous binder on a base, applying a support member of flexible sheet material on the surface of said first layer, spreading out a second layer of a mixture of solid particles and liquid resinous binder on said first layer and said support member, the quantity of solid particles in said mixture forming said second layer being such that upon subsequently allowing the solid particles to settle and to form a settled layer of particles with binder therebetween, an outer layer of binder in excess of that which settles between the particles is formed atop said settled layer, inserting one side portion of a core board element of open-celled structure into and through said outer layer and into engagement with said support member, and said support member keeping said core board element out of contact with said base, so that some binder of said outer layer enters and is picked up by the cells of said core board element, and finally allowing said binder to harden.

3,843,487

CURE OF RUBBER WITH TRIHALOISOCYANURIC ACID

Don V. Perkins, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Jan. 22, 1973, Ser. No. 325,907

Int. Cl. C08c *17/20, 17/28;* **C08d** *13/20, 13/28*

U.S. Cl. 156—334 **6 Claims**

1. A method of adhering two bodies together comprising applying to a surface of at least one of said bodies an adhesive cement comprising an olefinically unsaturated vulcanizable elastomer which is a copolymer of at least two different alpha-monoolefins with at least one copolymerizable polyene in admixture with a trihaloisocyanuric acid in amount effective to cure the said elastomer dissolved in an inert volatile organic solvent, bringing said bodies together with said adhesive thereinbetween, and subjecting the assembly to curing temperature to cure the adhesive and thereby adhesively secure the bodies together.

3,843,488

SEPARATION OF PROPYLENE OXIDE FROM OTHER HYDROCARBONS

John P. Schmidt, New York, N.Y., and Alfredo Garcia, Jr., Chicago, Ill., assignors to Halcon International, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 586,035, Oct. 12, 1966. This application Sept. 7, 1967 Ser. No. 665,992

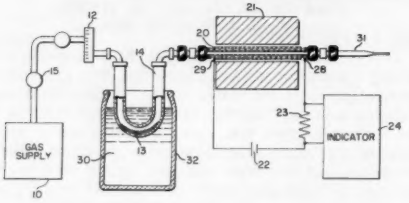
Int. Cl. B01d *3/34*

U.S. Cl. 203—52 **15 Claims**

1. A process for purifying propylene oxide formed by the epoxidation of propylene and containing C_5 to C_7 hydrocarbon contaminants which comprises fractionating the impure propylene oxide in the presence of at least about one part by weight of an alkane, alkene or naph-

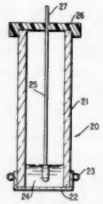
thene hydrocarbon having from 8 to 20 carbon atoms in the molecule per three parts by weight of propylene oxide and separating purified propylene oxide overhead.

3,843,489
METHOD OF DETERMINING SURFACE AREA AND METER THEREFOR
Yehuda L. Sandler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 1, 1973, Ser. No. 356,267
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 13 Claims



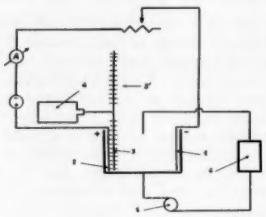
1. A method for determining the surface area of a sample, comprising in combination:
(a) exposing said sample to a selected gas;
(b) cooling said sample to cause said gas to be adsorbed by said sample;
(c) utilizing at least one electrochemical cell to generate at least one signal having a predetermined relationship to the amount of said gas adsorbed by said sample; and
(d) processing said signal to determine the surface area of said sample.

3,843,490
METHOD OF MEASURING HYDROPHOBIC ORGANIC IONS
Takeru Higuchi, Lawrence, Kans., assignor to INTERx Research Corporation, Lawrence, Kans.
Original application June 30, 1970, Ser. No. 50,070. Divided and this application Dec. 14, 1973, Ser. No. 424,893
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 16 Claims



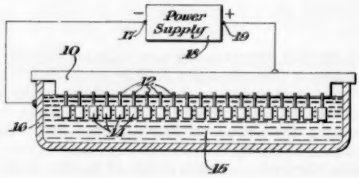
1. A method of measuring the concentration, in aqueous solution, of hydrophobic organic ions selected from the group consisting of hydrophobic organic anions and cations, which method comprises (A) contacting said solution containing said organic ion with (1) a polymer membrane having dispersed therein a compatible organic plasticizer which selectively solvates said ions selected from the group consisting of organic plasticizers containing acidic hydrogens and organic plasticizers containing available electron pairs, said membrane enclosing and being in electrical contact with a first standard reference electrode of known potential, and (2) a second standard reference electrode of known potential; (B) establishing a potential voltage between said first and second electrodes; and (C) measuring said potential voltage, wherein said potential voltage is proportional to the logarithm of the concentration of said ions in said solution.

3,843,491
PROCESS FOR THE PREPARATION OF SILVER BASE CATALYST
Mario Piro, Milan, and Luigi Rivola and Bruno Notari, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milanese, Italy
Filed Dec. 27, 1972, Ser. No. 319,060
Claims priority, application Italy, Dec. 28, 1971, 33,010/71
Int. Cl. C22d 5/00, 1/12
U.S. Cl. 204—10 14 Claims



1. A process for the preparation of silver useful as a catalyst by silver electrochemical deposition comprising: complexing a silver compound with a member selected from the group consisting of ammonic and fluoboric ions, electrolytically depositing the silver compound on a cathode, and concurrently removing the deposited silver from said cathode whereby the removed silver has a size of less than 1500 A.

3,843,492
TANTALUM PELLET SYSTEM AND METHODS OF MAKING AND USING THE SAME
Walter J. Bernard, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed May 18, 1973, Ser. No. 361,739
Int. Cl. B23k 31/02; C23b 5/56, 5/68
U.S. Cl. 204—25 7 Claims



1. A tantalum pellet system comprising a bar of an alloy consisting essentially of aluminum and from about one to six percent of magnesium by weight; and a plurality of sintered tantalum pellets, each said pellet having a tantalum wire lead extending therefrom, each said lead being welded to said bar, each said lead lying essentially at right angles to the major axis of said bar, all said leads lying essentially in one plane and the closest separation between each said pellet and said bar being ⅜ inch or less.

3,843,493

FORMATION OF HIGH STRENGTH ELECTROPLATED FILAMENTS

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 74,515, Sept. 22, 1970, which is a continuation-in-part of application Ser. No. 860,415, Sept. 23, 1969, both now abandoned. This application Mar. 6, 1972, Ser. No. 232,215

Int. Cl. C23b 5/60

U.S. Cl. 204—30 7 Claims

1. In the process for producing a plated filament wherein a polymeric filament, having a non-macroporous surface, is treated with an organic solvent solution of material selected from elemental white phosphorus and low oxidation state phosphorus compounds, in which the organic solvent of said solution is one which is capable of swelling the surface of said filament without detrimentally affecting it, the resulting filament is treated with a metal salt or a complex thereof in which the metal is selected from Group IB, IIB, IVB, VB, VIB, VIIB, VIII of the Periodic Table and the resulting treated filament is then electroplated, the improvement which comprises effecting the electroplating so that that a portion of the filament within the plating bath is maintained free of deformation tensions and changes in deformation tensions which cause random nucleation of the metal being electrolytically deposited, whereby an electroplated filament is formed having on its surface an adherent, electrolytically deposited metal coating having an ordered nucleation.

3,843,494

PROCESS FOR PREPARING ZINC COATED FERROUS METAL SUBSTRATES HAVING IMPROVED RESISTANCE SPOT WELDING CHARACTERISTICS

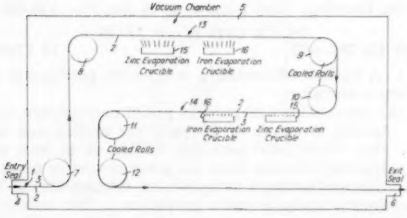
David Richard Brown, Swansea, Wales, assignor to British Steel Corporation, London, England

Continuation-in-part of abandoned application Ser. No. 837,935, June 30, 1969. This application Mar. 13, 1972, Ser. No. 234,010

Claims priority, application Great Britain, July 5, 1968, 32,155/68

Int. Cl. B23k 11/10; C23f 17/00

U.S. Cl. 204—34 9 Claims



1. A process for preparing a zinc coated ferrous metal substrate having increased corrosion resistance and improved resistance spot welding characteristics consisting of the steps of applying on a ferrous metal substrate separate layers of metallic zinc and of metallic iron, the outermost layer being a substantially continuous metallic iron layer which increases the corrosion resistance and promotes the ease with which a plurality of said zinc coated ferrous metal substrates may be welded by resistance spot welding, the said outermost substantially continuous metallic iron layer being applied on a metallic zinc layer by electrodeposition from an aqueous iron plating solution or by vacuum deposition and being unalloyed with the metallic zinc layer, the said outermost metallic iron layer being applied in a thickness between 4% and 80% of that of the metallic zinc layer and having a thickness of at least 0.5 micron, and the metallic zinc layer on which the said outermost metallic iron layer is applied being applied by vacuum deposition or hot dip galvanizing.

3,843,495

CORROSION RESISTANCE OF DECORATIVE CHROMIUM ELECTROPLATED OBJECTS

Thomas P. Malak, Garfield Heights, Ohio, assignor to Kewanee Oil Company, Bryn Mar, Pa.

No Drawing. Continuation of application Ser. No. 206,893, Dec. 10, 1971, which is a continuation-in-part of application Ser. No. 850,657, Aug. 15, 1969, both now abandoned. This application Nov. 1, 1973 Ser. No. 411,604

Int. Cl. C23b 5/50; C23f 17/00

U.S. Cl. 204—35 R 5 Claims

1. A method of improving the corrosion protection of a base metal comprising the successive steps of:

(a) electrodepositing a decorative layer of nickel, cobalt or an alloy thereof over the base metal;

(b) impinging a solid particulate material against the decorative layer to form at least 3000 micronicks per square inch extending into, but not through, said decorative layer without visably dulling the same, the size of said micronicks not exceeding about 8 microns at the surface of said layers; and

(c) depositing a layer of chromium to a thickness of at least about 5 millionth of an inch over said decorative layer, said chromium layer being substantially continuous but being characterized by the presence of discontinuities coinciding with the micronicks in the decorative layer.

3,843,496

METHOD FOR FORMING A COLORED OXIDE COATING ON THE SURFACES OF ALUMINUM OR ALUMINUM ALLOY MATERIALS

Masashi Ikegaya and Fumio Shigeta, Shizuoka, Japan, assignors to Riken Light Metal Industries Co., Ltd., Shizuoka City, Japan

No Drawing. Filed Aug. 9, 1972, Ser. No. 279,658

Claims priority, application Japan, Aug. 10, 1971, 46/60,377 46/60,378

Int. Cl. C23b 9/02

U.S. Cl. 204—58 5 Claims

1. A method of producing a colored oxide coating having reddish color tone on aluminum or aluminum alloy, consisting essentially of electrolytically anodizing, with an alternating current, a suitable aluminum material selected from the group consisting of aluminum and alloys thereof in an aqueous acid solution containing selenium selected from the group consisting of an aqueous solution of 5.0–20.0% by weight of sulfuric acid and 0.01–1.0% by weight of a selenium compound and an aqueous solution of 5.0–15.0% by weight of phosphoric acid and 0.01–1.0% by weight of a selenium compound.

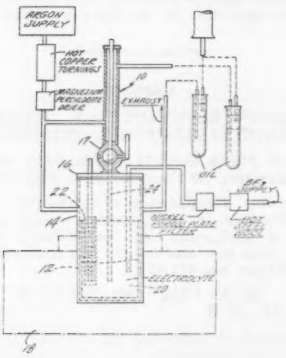
3,843,497

ELECTROLYTIC PRODUCTION OF BORON

Sid Russell, Suffield, Frederick A. Young, Simsbury, and Jordan D. Kellner, West Suffield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of abandoned application Ser. No. 833,913, June 17, 1969. This application Mar. 13, 1972, Ser. No. 234,306

Int. Cl. C23b 5/00; C22d 3/00
U.S. Cl. 204—64 R 8 Claims



1. A process for producing substantially pure coherent boron on a cathode by electrodeposition from a fused salt bath consisting essentially of an alkali or alkaline earth metal fluoride or mixture of fluoride comprising:

purifying the alkali or alkaline earth metal fluoride or mixture of fluorides until the residual oxianion contamination level therein is no greater than that amount which will produce a current maximum of 10 ma./cm.^{2} when an anodic potential of 1.5 volts is impressed on a carbon electrode therein;

heating the fluoride or mixture of fluorides to a temperature of about 1000° to 1400° F. in a noncontaminating atmosphere;

establishing in the bath a fluoborate ion concentration not exceeding about 20 percent by weight;

establishing a current density at the cathode not exceeding about 400 milliamperes per square centimeter;

the current density at the cathode being selected with reference to the fluoborate concentration to fall within the operating limits defined by the area LMNO of FIG. 2; and

the current density at the cathode further being selected with reference to the bath temperature to fall within the operating limits defined by the area WXYZ of FIG. 3.

3,843,498

RECOVERY OF ALUMINUM FLUORIDE

Thomas F. Payne, Columbia Falls, Mont., assignor to The Anaconda Company, Louisville, Ky.

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,494

Int. Cl. C01b 11/00; C01f 7/50; C22d 3/12
U.S. Cl. 204—67 17 Claims

1. Process for producing aluminum fluoride from a fluoride-containing aqueous solution which comprises:

introducing alumina trihydrate into said solution and reacting the fluoride content of said solution with said alumina trihydrate at an elevated temperature to produce a complex aluminum hydroxide fluoride hydrate compound in said solution,

introducing aluminum oxide into the solution to precipitate aluminum hydroxide fluoride hydrate crystals from the solution,

recovering said aluminum hydroxide fluoride hydrate precipitate from the solution, and

calcining said precipitate to produce aluminum fluoride, combined in a mixture with said aluminum oxide.

3,843,499

PRODUCTION OF 4-ENDOTRICYCLO(5,2,1,0$^{2,6\text{-ENDO}}$) DECYLAMINE

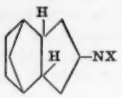
Bernd Giese, Heidelberg, and Peter Jaeger, Horst Koenig, and Karl Siegfried Brenner, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 12, 1973, Ser. No. 331,560

Int. Cl. C07b 29/06; C07c 87/40
U.S. Cl. 204—74 7 Claims

1. A process for the production of sterically uniform 4-endotricyclo(5,2,1,0$^{2,6-\text{endo}}$) - decylamine which comprises:

electrochemically reducing a compound of the formula



wherein X is hydrogen, hydroxy or —OCOR in which R is lower alkyl of 1 to 4 carbon atoms, said reduction being carried out in a liquid solvent selected from the group consisting of an organic solvent and an aqueous organic solvent reaction medium at a mercury, lead or amalgam electrode at a current density of about 1 to 20 amps/dm.^{2} at a temperature of from —20° C. to 40° C. and a pH of about 5 or less; and

separating the substantially sterically uniform amine product from the reaction medium.

3,843,500

PURIFICATION OF MAGNESIUM PERCHLORATE

James Edward Reynolds, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Mar. 5, 1973 Ser. No. 338,409

Int. Cl. C01b 11/18, 11/26
U.S. Cl. 204—82 10 Claims

1. A method of treating a magnesium perchlorate solution comprising:

(a) introducing a magnesium perchlorate solution, containing in excess of 50 parts per million and less than about 3000 parts per million of at least one impurity selected from the group consisting of chloride and chlorate ions, into an electrolytic cell between a cathode and a anode;

(b) passing an electric current through the electrolytic cell from the anode to the cathode at a cell voltage of from about 4.0 to 8.0 volts and at an anodic current density of from about 50 to 150 amps per square foot; and

(c) maintaining the pH of the solution within the range of from about 4.5 to 6.5 whereby substantially all the impurities are converted to perchlorate ions.

3,843,501

METHOD OF FORMING EXTRUDER SCREW

Kenneth Bryan King, Hitchin, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 14, 1972, Ser. No. 271,742
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.65 10 Claims

1. A method of forming an extruder screw which includes applying to the surface of a metallic rod of substantially circular cross-section a masking resist in a configuration corresponding to that of the land pattern of the screw, subjecting the masked rod, as anode, to the action of an electrolytic solution traversed by an electric current to remove metal from the unmasked areas of the rod, and removing the masking resist from the resultant screw.

3,843,502

PROMOTERS FOR RADIATION INDUCED CROSS-LINKING IN POLYMER SUBSTANCES

Dale S. Pearson and Anton Shurpik, Hauppauge, N.Y., assignors to The Firestone Tire & Rubber Co., Akron, Ohio

No Drawing. Filed June 1, 1971, Ser. No. 148,883
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.18 7 Claims

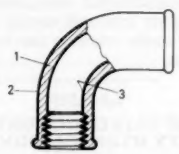
1. A process for the radiation vulcanization of diolefin rubbers which comprises subjecting an unvulcanized composition of said diolefin rubber in which the average molecular weight is from about 100,000 to 500,000 containing from about 0.1 to 5% by weight of an organic polyhydrosulfide direct vulcanization promoter, and from about 0.1 to 5% by weight of an indirect vulcanization promoter, said indirect vulcanization promoter being a low molecular weight halogenated aliphatic or aromatic hydrocarbon containing up to about ten carbon atoms, the percent by weight of both promoters being based on the total weight, to high energy ionizing radiation at a total dose of from about 0.1 to 15 Mrads.

3,843,503

METHOD OF COATING AN ELECTRICALLY CONDUCTIVE WORK PIECE BY ELECTROPHORESIS AND COATED ARTICLES PRODUCED BY METHOD

Hans-Jochen Wagner, Wettingen, Switzerland, assignor to Georg Fischer, Aktiengesellschaft, Schaffhausen, and Dr. Walter Mader, Lack- und Farbenfabrik Aktiengesellschaft, Baden, Switzerland

Continuation-in-part of application Ser. No. 296,603, Oct. 11, 1972. This application Apr. 11, 1973, Ser. No. 350,203
Claims priority, application France, Oct. 12, 1972, 7236212
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 20 Claims



1. In the method of coating an electrically conductive work piece with a resin using electrophoresis, comprising connecting said work piece to a source of current to form an electrode and immersing said work piece in an aqueous bath containing a resin in solution, dispersion or suspension, and electrodepositing said resin on said work piece to form a coating thereon,

the improvement wherein

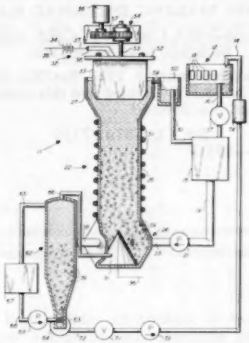
said bath contains an additive of 0.05–5% by weight of a titanium chelate.

3,843,504

METHOD OF CONTINUOUSLY REGENERATING AND RECYCLING A SPENT ETCHING SOLUTION

Benjamin E. Nayder, Advance, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 280,965
Int. Cl. C01b *15/08;* C22d *1/10;* C23f *1/00*
U.S. Cl. 204—82 7 Claims



1. A method of reducing a metal sulfate to its corresponding metal wherein the metal sulfate is selected from the group consisting of copper sulfate, cobalt sulfate, iron sulfate, nickel sulfate and zinc sulfate and is in a solution comprising sodium persulfate and potassium sulfate in a molar concentration in excess of the persulfate concentration, comprising the steps of:

cooling the solution to a temperature below about 20° to precipitate potassium persulfate, thereby forming a solution essentially free of persulfate values; and

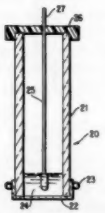
exposing the essentially persulfate free solution to an electrolytic reaction to reduce the metal in the metal sulfate to its corresponding metal.

3,843,505

ION-SELECTIVE ELECTRODES FOR ORGANIC IONS

Takeru Higuchi, 2811 Schwarz Road, Lawrence, Kans. 66044

Filed June 26, 1970, Ser. No. 50,070
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M 19 Claims



1. An electrode useful in measuring the concentration, in an aqueous phase, of hydrophobic organic ionic species selected from the group consisting of hydrophobic organic cations and hydrophobic organic anions, said electrode comprising:

a membrane consisting essentially of a polymer having dispersed therethrough a compatible organic plas-

ticizer capable of solvating, absorbing and transferring said ionic species, said plasticizer being selected from the group consisting of dioctyl phthalate and dimethyl oleamide; and

an internal reference electrode element in electrical contact with and enveloped by said membrane.

3,843,506

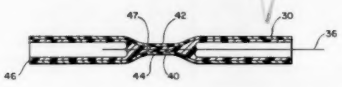
METHOD OF MAKING INTERNAL HALF CELL

Paul Jerrold-Jones, Claremont, Calif., assignor to Beckman Instruments, Inc.

Original application June 19, 1972, Ser. No. 263,782, now Patent No. 3,793,176. Divided and this application Sept. 19, 1973, Ser. No. 398,663

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 F **8 Claims**



1. A method of making an internal half cell for an electrochemical electrode comprising the steps of:

providing a plastic shrink tube having a separate inner layer of plastic thereon, said inner layer having a melting temperature less than that of said tube;

inserting a conductor lengthwise in said tube;

forming a seal between said inner layer and said conductor at a point spaced from at least one end of the tube by heating said tube to a temperature sufficient to soften said inner layer and shrink said tube;

packing said tube between said seal and said one end with a mixture of a metal and a sparingly soluble salt of said metal; and

closing said one end of said tube with a porous plug.

3,843,507

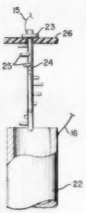
SCALE INHIBITING APPARATUS

Philip Henry Kwan, South Pasadena, Calif., assignor to Key II Industries, Camarillo, Calif.

Filed Nov. 29, 1972, Ser. No. 310,240

Int. Cl. B03c *5/02*; **C02b** *1/82*

U.S. Cl. 204—302 **4 Claims**



1. An apparatus for inhibiting scale formation in water pipes comprising, in combination:

a. a portable control box incorporating means for generating a square wave voltage of given low frequency no greater than 900 cycles per second which alternates in polarity;

b. a pipe section associated with said control box through which water passing to the water pipes flows;

c. probe means in the form of radially extending individual probes of cylindrical shape following a helical path positioned in and supported by said pipe section so that water flows over said probe means in physical and electrical contact therewith;

d. electrical insulating means insulating the probe means from the pipe section at the point of support; and,

e. first and second electrical leads passing from said control box to said probe means and said pipe section respectively to apply said square wave voltage to the probe means and pipe section so that the probe means is charged alternately positively and negatively at said given frequency to inhibit charged ions of minerals in the water from adhering to the inner walls of the water pipes.

3,843,508

SPLIT FLOW HYDRODESULFURIZATION AND CATALYTIC CRACKING OF RESIDUE-CONTAINING PETROLEUM FRACTION

Raymond F. Wilson, Reese A. Peck, and Frank E. Guptill, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 101,444, Dec. 24, 1970, now Patent No. 3,671,420, which is a continuation-in-part of application Ser. No. 811,604, Mar. 28, 1969, now Patent No. 3,607,723. This application Apr. 17, 1972, Ser. No. 244,863

The portion of the term of the patent subsequent to July 27, 1988, has been disclaimed

Int. Cl. C10g *23/02*

U.S. Cl. 208—89 **11 Claims**

1. A process for the conversion of a residue-containing petroleum fraction having an initial boiling point of about 850° F. into lighter products which comprises maintaining in a hydrodesulfurization zone a first catalytic zone below and a second catalyst zone above a point of entry into said hydrodesulfurization zone, each of said catalytic zones containing a hydrodesulfurization catalyst comprising an iron group metal hydrogenation component on a refractory inorganic oxide support of substantially no cracking activity, the catalyst in said first catalytic zone having a surface area of from 250 to 600 $m.^2/g.$ and a pour volume of from 0.6 to 1.0 cc./g., introducing the residue-containing petroleum fraction through said point of entry into said hydrodesulfurization zone, maintaining said first and said second catalytic zone at a temperature between about 600 and 775° F. and a pressure between about 500 and 5000 p.s.i.g., introducing hydrogen into said first catalytic zone to flow upwardly serially through said first and said catalyst zones and countercurrent to a portion of said residue-containing petroleum fraction at a rate of at least 3000 s.c.f. per barrel of residue-containing petroleum fraction sufficient to maintain liquid hydrocarbon in said second catalytic zone, separately recovering product from said first and second catalytic zones, catalytically cracking the overhead product from said second catalytic zone and separately catalytically cracking the bottoms from said first catalytic zone.

3,843,509

METHOD OF CATALYTIC CONVERSION OF HEAVY HYDROCARBON OILS

Munehisa Suto, Tokyo, Takuji Itoh, Nobuaki Tagaya, and Takashi Obayashi, Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha

Filed Dec. 22, 1972, Ser. No. 317,714

Claims priority, application Japan, Jan. 6, 1972, 47/4,403

Int. Cl. C10g *13/02, 23/02*

U.S. Cl. 208—111 **7 Claims**

1. A process for the conversion of a heavy hydrocarbon oil comprising contacting said oil with hydrogen and a

catalyst composite comprising a catalytic metal or compound thereof on a porous silica-alumina carrier having a silica content in the range of between 0 and about 30% by weight and further characterized in that:

(1) the volume of the pores in said catalyst having a radius in the range of from about 0 to about 300 A. is greater than about 0.30 ml./g.;

(2) the volume of the pores in said catalyst having a radius in the range of from about 0 to about 30 A. is less than about 25% of the volume of the pores having a radius in the range of from about 0 to about 300 A.;

(3) the volume of the pores having a radius in the range of from about 75 to about 300 A. is less than about 40% of the volume of the pores having a radius in the range of from about 0 to about 300 A.; and

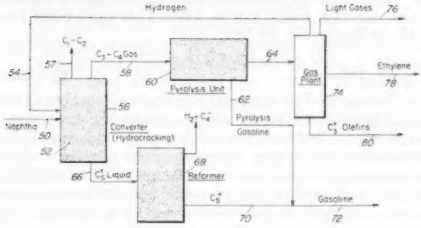
(4) the volume of the pores having a radius in the range of from about 75 to about 75,000 A. is smaller than about 0.25 ml./g.

3,843,510

SELECTIVE NAPHTHA HYDROCRACKING

Roger A. Morrison, West Deptford, N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation

Filed Mar. 23, 1973, Ser. No. 344,453
Int. Cl. C10g *13/10*
U.S. Cl. 208—111 **10 Claims**



1. A process comprising contacting a gasoline boiling range virgin naphtha with a catalyst consisting essentially of ZSM–5 type of alumino-silicate zeolite having a hydrogenation/dehydrogenation component therein in admixture with added hydrogen in a hydrogen to hydrocarbon ratio of about 1 to 10, at about 600 to 800° F., 50 to 1000 p.s.i.g. and 0.5 to 10 WHSV, under such combination of conditions as to hydrocrack at least about 40 wt. percent of said virgin naphtha to pentane and lighter products having a C_3 to C_4 ratio of about 1.0 to 1.4, and an n–C_4 to i–C_4 ratio of about 0.85–1.2; which process also produces up to about 60 wt. percent of a C_5^+ liquid product having a minimum clear research octane number of about 80, which liquid product has an octane number of at least about 40 units higher than said feed.

3,843,511

PROCESS FOR PREPARING SYNTHETIC PETROLATUM

Charles M. Selwitz, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 24 1973, Ser. No. 409,244
Int. Cl. C07c *3/02, 5/22*; C10g *11/04, 43/02*
U.S. Cl. 208—120 **6 Claims**

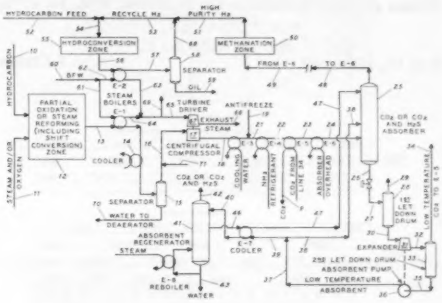
1. A process for preparing a synthetic petrolatum which involves passing alpha olefins having 30 or more carbon atoms over silica alumina at a temperature of about 200° to about 260° C.

3,843,512

HYDROGEN MANUFACTURE USING CENTRIFUGAL COMPRESSORS

Calvin S. Smith and William J. McLeod, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Application May 17, 1968, Ser. No. 736,520, now Patent No. 3,618,331, which is a continuation-in-part of abandoned application Ser. No. 665,106, Sept. 1, 1967. Divided and this application June 26, 1970, Ser. No. 59,865
The portion of the term of the patent subsequent to Oct. 13, 1988, has been disclaimed
Int. Cl. C10g *23/00*
U.S. Cl. 208—212 **4 Claims**



1. In a process for manufacturing high purity by a train of steps comprising reacting hydrocarbon with oxygen-affording gas at conditions including a pressure below 900 p.s.i.g. and elevated temperature to form a gas mixture comprising H_2, CO and CO_2, reacting CO in the mixture with H_2O to form additional H_2 and CO_2, and removing the CO_2 to provide high purity hydrogen, the improvement for providing the high purity hydrogen at elevated pressure which comprises:

(a) centrifugally compressing with a centrifugal compressor the gas mixture comprising H_2 and CO_2 from the pressure below about 900 p.s.i.g. to a substantially higher pressure above 900 p.s.i.g., said mixture containing sufficient CO_2 so that the molecular weight of the mixture is at least 4; then

(b) removing CO_2 from said compressed gas by absorbing CO_2 in a physical absorbent at a pressure above 900 p.s.i.g. to thus obtain said high purity hydrogen;

(c) passing the high purity hydrogen to a hydroconversion zone, and reacting said purified hydrogen with hydrocarbons in said hydroconversion zone;

(d) withdrawing a hot effluent from the hydroconversion zone and passing said hot effluent through a steam boiler to generate steam; and

(e) using said steam to drive the centrifugal compressor through a steam turbine linkage for said centrifugal compressing.

3,843,513

METHOD OF IMPROVING THE VISCOSITY INDEX OF LUBRICATING OILS

Raymond Wynkoop, Gladwyne, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

No Drawing. Filed Oct. 29, 1973, Ser. No. 410,593
Int. Cl. C10m *11/00*
U.S. Cl. 208—282 **7 Claims**

1. Method of improving the VI of an aromatic-containing lubricating oil boiling above 650° F. which comprises:

(a) contacting a relatively low VI aromatic-containing lubricating oil with a benzenecarboxylic acid anhy-

dride for a time sufficient to form a complex of said anhydride with low VI aromatic components of the oil, and

(b) separating the complex from the remaining oil, whereby there is obtained a relatively high VI lubricating oil.

3,843,514

MOLECULAR SIEVE PROCESS

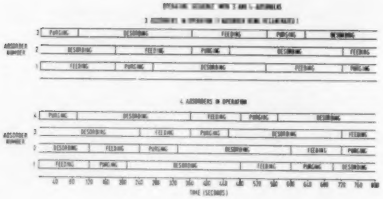
Ivor Lloyd Edwards, Ashford, England, assignor to The British Petroleum Company Limited, London, England

Filed Sept. 18, 1972, Ser. No. 289,834

Claims priority, application Great Britain, Sept. 24, 1971, 44,632/71

Int. Cl. C07c 7/12

U.S. Cl. 208—310 **5 Claims**



1. A process for the separation of *n*-paraffins from mixtures of the same with branched chain and/or cycloparaffins by employing 3 or more beds of 5 A. molecular sieve at a temperature of 300 to 450° C. and using stages of adsorption, purge and desorption wherein to maintain a continuous feed the durations of the three stages satisfy the formula

$$\frac{p+d}{f} = \text{number of adsorbers} - 1$$

where p, d and f are the durations of the purge, desorption and absorption stages respectively which process comprises periodically taking one bed out of use and adjusting the space velocity and the cycle timings of the remaining beds so that the amount of feed per cycle remains unchanged.

3,843,515

COUNTERCURRENT LUBE EXTRACTION WITH DUAL SOLVENT SYSTEM

John MacKillop MacDonald, Sarnia, Ontario, Canada, and Charles Chuan-Chi Hong, Columbus, Ohio, assignors to Esso Research and Engineering Company

Filed Mar. 15, 1972, Ser. No. 234,733

Int. Cl. C10g 21/20; C07c 7/10

U.S. Cl. 208—326 **8 Claims**

1. A countercurrent extraction process for the upgrading of a hydrocarbon oil comprising contacting said oil with a solvent comprising N-methyl-2-pyrrolidone and water, in an extraction zone, thereby forming a solvent-oil mixture, said water and said N-methyl-2-pyrrolidone introduced separately into said extraction zone and wherein said water is introduced at a point below the point of introduction of said N-methyl-2-pyrrolidone, so as to prevent substantial mixing of said water and said N-methyl-2-pyrrolidone prior to said N-methyl-2-pyrrolidone contacting said oil.

3,843,516

PROCESS FOR TREATING WASTE SOLUTIONS CONTAINING CYANO-HEAVY METAL-COMPLEX COMPOUNDS

Tuneto Yamada, Seimei Kondo, and Satoshi Yoshihara, Niigata, Tokuji Sugahara, Tokyo, and Shuji Murakami, Masatsune Ito, and Kunio Hirata, Niigata, Japan, assignors to Toyo Gas Chemical Industry, Inc., Tokyo, Japan

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,637

Claims priority, application Japan, Jan. 10 1972, 47/5,066

Int. Cl. B01d 21/00

U.S. Cl. 210—22 **6 Claims**

1. A process for treating an aqueous solution containing ferricyanide and ferrocyanide complex compounds which comprises adding to said solution (1) phosphoric acid, (2) sulfuric acid and (3) an oxidizing agent, and then decomposing the mixture to convert the iron into a soluble iron salt and to remove cyanide from the solution.

3,843,517

METHODS FOR ELIMINATION OF OIL SLICKS

Robert W. McKinney, Adelphi, Md., Andrew L. Dixon, Jr., Wickliffe, Ohio, and Raymond L. Jordan, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 1,512, Jan. 8, 1970. This application Dec. 17, 1970, Ser. No. 99,253

Int. Cl. C02b 9/02

U.S. Cl. 210—11 **10 Claims**

1. The method of removing oils and hydrocarbons from the surface of a body of water comprising dispersing a freeze-dried hydrocarbon consuming microorganism composition comprising microorganisms adsorbed within an inorganic microporous carrier onto said oils and hydrocarbons, said surface having water and moisture present whereby said microorganism composition is activated, and allowing said microorganism composition to remain in contact with said oils and hydrocarbons whereby the microorganisms in said composition digest and remove the oils and hydrocarbons.

3,843,518

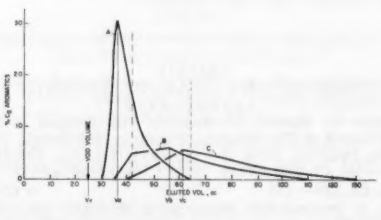
COMMERCIAL CHROMATOGRAPHY FOR MORE THAN TWO COMPONENTS

Ellington M. Magee, Elizabeth, and Frank J. Healy, Morristown, N.J., assignors to Esso Research and Engineering Company

Filed Aug. 23, 1972, Ser. No. 282,983

Int. Cl. B01d

U.S. Cl. 210—31 C **11 Claims**



1. An elution chromatography process for separating a pure p-xylene/ethylbenzene fraction from a C_8 aromatic

mixture containing p-xylene and ethylbenzene which comprises:

(a) contacting said C_8 aromatic isomer mixture *in the liquid phase* in a first chromatographic column with a molecular sieve; said sieve having an

$$\alpha \frac{\text{p-xylene}}{\text{meta-xylene}}$$

of greater than about 2 and an

$$\alpha \frac{\text{p-xylene}}{\text{ethylbenzene}}$$

in the range of from about 1 to

$$\alpha \frac{\text{p-xylene}}{\text{meta-xylene}}$$

said contacting being conducted at temperatures in the range of 25 to 200° C. and carried out at a feed rate greater than about 2 times the maximum feed rate at which three components can be separated pure in a single column chromatographic column;

(b) passing through said chromatographic column an eluent selected from the group consisting of aromatics and substituted aromatics;

(c) recovering from said first chromatographic column a stream containing ethylbenzene and paraxylene and a stream or streams containing a mixture of m-xylene, o-xylene, ethylbenzene and p-xylene; and

(d) recycling at least a portion of said stream containing m-xylene, o-xylene, ethylbenzene and p-xylene to said first chromatographic column;

(e) passing a portion of said stream containing ethylbenzene and p-xylene recovered in said (c) above to a second chromatographic column containing a second molecular sieve; contacting said stream with a second molecular sieve under adsorption conditions to effect the selective adsorption of one of the components of said stream and thereby recovering from said second chromatographic column enriched p-xylene and ethylbenzene streams.

3,843,519

INHIBITING GROWTH OF MICROORGANISMS IN AQUEOUS SYSTEMS

Milton Manowitz, Fair Lawn, Frederick H. Sharpell, Jr., Pequannock, and Carolyn Stegmann, Dumont, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed June 6, 1973, Ser. No. 367,623
Int. Cl. C02b *3/08*
U.S. Cl. 210—64 **8 Claims**

1. The method of inhibiting the detrimental growth of microorganisms in an aqueous medium susceptible to such growth which comprises incorporating in the aqueous medium from about 0.025 to about 1% by weight of 2-(2-hydroxypropyl)-6-methyl-1,3-dioxan-4-ol.

3,843,520

FLOATING WATER SCREEN

Robert G. Bottorf, Jenkintown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed May 26, 1972, Ser. No. 257,407
Int. Cl. B01d *33/02*
U.S. Cl. 210—161 **11 Claims**

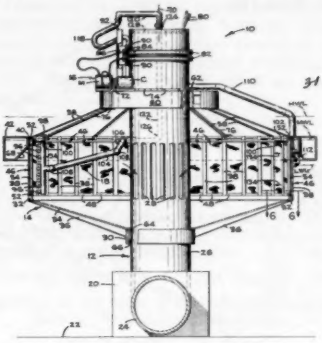
1. Apparatus for screening large quantities of water comprising:

a vertical post mounted in a fixed position within a body of water, said post having an internal passage communicating with an outlet pipe and having a peripheral opening in communication with said internal passage,

a frame supporting an endless circle of screens about said post,

means mounting said frame for vertically sliding movement on said post with said screens in radially spaced relation to said post and to said opening,

said frame having a float secured thereto to sustain said frame in predetermined relation to the surface of the body of water with the upper edges of the screens above the said body of water, and,



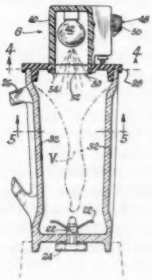
means blocking water flow beneath said screens into said post opening, whereby water is compelled to flow through said screens to said opening.

3,843,521

DOMESTIC WATER PURIFICATION METHOD AND SYSTEM

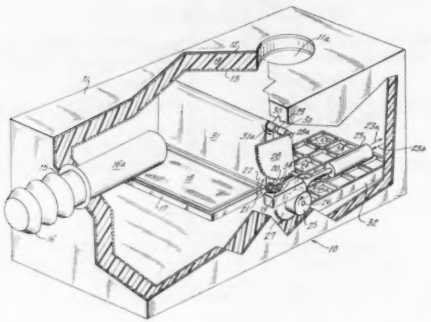
Jack D. Zeff, Deerfield, Ill., assignor to Inca-One Corporation, Los Angeles, Calif.

Filed Aug. 14, 1972, Ser. No. 280,552
Int. Cl. C02b *3/08*
U.S. Cl. 210—138 **8 Claims**



1. A household ozone generator and purification system for the purification of small quantities of impure water comprising a housing, an ozone generator mounted in said housing, means secured to said housing for energizing the ozone generator for preselected time intervals, an open topped container having an impeller adjacent its base, a cap for said open top, said cap defining an opening therein, and means for mounting said housing on said cap to permit ozone to flow through said cap and into said container, whereby when said impeller is rotated and ozone is generated and flows into said container, impure water is purified.

3,843,522
UNIVERSAL WASTE DISPOSAL SYSTEM
Gerald J. Harvey, 81 Urban Ave., Westbury, N.Y. 11590, and Richard D. Angelari, 334 W. 71st St., New York, N.Y. 10023
Filed June 9, 1972, Ser. No. 261,339
Int. Cl. C02b 1/02; F23g 5/00
U.S. Cl. 210—179 1 Claim



1. A portable waste disposal system comprising a housing; barrier means dividing said housing into first and second chambers;

said first chamber having an inlet for receiving waste matter;

first means in said first chamber positioned adjacent said inlet for depositing liquid waste matter in said first chamber, said first means being comprised of a porous member positioned beneath said inlet for retaining and supporting solid waste and permitting liquid waste to pass therethrough so as to be collected upon the floor of said first chamber;

said first means further comprising second means for conveying solid waste matter into said second chamber, said second means further including means for rotating said porous member towards said second chamber to deposit therein solid waste matter collected upon said porous member;

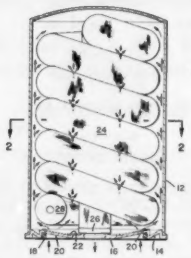
said second chamber having a pool of molten material;

baffle means positioned in and restraining the movement of said pool of molten material; and

third means for heating said pool of molten material to an elevated temperature, said barrier means being comprised of a normally vertically aligned rotatable barrier plate coupled to said rotating means for moving said barrier plate to a horizontal position to provide sufficient clearance for said porous member to enable the same to transfer solid waste matter into said second chamber whereby said pool of molten material combusts solid waste matter deposited thereon.

3,843,523
OIL FILTER
Stanley F. Dresen and Reuben E. Anderson, San Ramon, Calif., assignors to Stanley F. Dresen, doing business as SFD Oil Filters, San Ramon, Calif.
Filed May 24, 1972, Ser. No. 256,526
Int. Cl. B01d 27/00
U.S. Cl. 210—440 9 Claims

1. A filter comprising a cylindrical housing having one integral end wall, an end disk mounted to the open end of said housing, said end disk having an outlet disposed at the center of said end disk and at least one inlet disposed about the periphery of the outlet, and an elongate filter element having a length greater than the length of said housing, said filter element having a return path interior thereof, said filter element being disposed within said housing along a tortuous path with said return path communicating with said outlet, said tortuous path comprising a first portion at the end of said filter element adja-



cent said outlet directed axially with respect to said housing and a second portion defining a spiral configuration closely wound about said first portion so that said filter element substantially fills the interior of the cylindrical housing to maximize the filter surface available in said housing.

3,843,524
PROCESS FOR THE INHIBITION OF SWELLING OF SHALE IN AQUEOUS ALKALINE MEDIUM
Alphonse C. Perricone, Homer F. Young, George W. Bettge, and Dorothy P. Enright, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.
No Drawing. Filed June 6, 1972, Ser. No. 260,219
The portion of the term of the patent subsequent to Oct. 2, 1990, has been disclaimed
Int. Cl. C10m 3/04; E21b 43/16
U.S. Cl. 252—1 35 Claims

1. A process for inhibiting the swelling of shale in an aqueous alkaline medium comprising the steps of:

A. Preparing an aqueous medium;

B. Adding to said medium a polyvalent metal ion selected from the class consisting of bismuth, chromium, cobalt, iron, lanthanum, manganese, nickel, tin, titanium, zinc, and zirconium, said ion being complexed by a complexing component selected from the class consisting of acetic, citric, formic, lactic, oxalic, and tartaric acid, the alkali metal and ammonium salts and mixtures thereof, the equivalent weight ratio of polyvalent metal ion to complexing component being at least about 1-to-.2;

C. Adjusting the pH of the medium to above 7.0; and

D. Adding to said medium shale to provide a suspension.

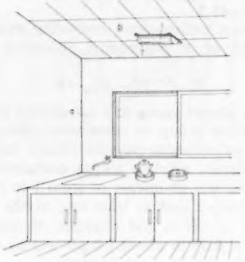
3,843,525
METHOD OF EXTINGUISHING FIRES
Yasuzo Hattori, Urawa, and Jiro Niizuma, Tokyo, Japan, assignors to Akira Hattori, Saitama-ken, and Hiromitsu Niizuma, Tokyo, Japan
Filed Dec. 4, 1972, Ser. No. 311,905
Claims priority, application Japan, Dec. 9, 1971, 46/99,043
Int. Cl. A62c 1/00; A62d 11/00
U.S. Cl. 252—2 4 Claims

1. Method of extinguishing fire in a building which comprises using a fire-extinguishing composition consisting essentially of an aqueous solution of

(a) from about 7.0 to about 7.5 parts by weight of burnt alum,

(b) from about 6.0 to about 6.2 parts by weight of ammonium carbonate,

(c) from about 3.5 to about 4.0 parts by weight of sodium chloride,
(d) from about 4.0 to 4.5 parts by weight of calcium chloride,
(e) from about 2.0 to about 3.0 parts by weight of anhydrous sodium carbonate,
(f) about 25.0 parts by weight of water glass,
(g) from about 1.0 to about 1.5 parts by weight of calcium carbonate,



(h) from about 1.0 to about 1.5 parts by weight of magnesium carbonate, and
(i) from about 10.0 to about 10.5 parts by weight of sodium bicarbonate, said composition being kept in a container in the building which container is breakable at elevated temperatures below 100° C. and adapted to extinguish a fire in the building when the heat of the fire causes the container to break and spray the said fire-extinguishing composition over the fire.

3,843,526

NOVEL INTUMESCENT COMPOSITION CONTAINING AN AROMATIC AMINE SULFATE

Shirley H. Roth, Highland Park, and Joseph Green, East Brunswick, N.J., assignors to Cities Service Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,642, Dec. 18, 1970. This application Apr. 28, 1972, Ser. No. 248,704

Int. Cl. B27k *3/00*

U.S. Cl. 252—8.1 **6 Claims**

1. An intumescent composition comprising as the intumescent agent a mixture of (A) one molar proportion of a sulfate of an aromatic amine of the group consisting of p-nitroaniline, o-nitroaniline, m-nitroaniline, 3-amino-1-nitronaphthalene, 4-amino-4′-nitro-bphenyl, 1,5-diamino 4,8-dinitronaphthalene, 2-amino-7-nitrofluorene, 4-amino-2-nitrofuran, 5-nitroisatoic anhydride, and 4-nitroacetanilide and (B) about 1–5 molar proportions of a boron compound of the group consisting of boric acid, an organoboric acid, an organoborate, and an organoboroxine.

3,843,527

ANTIFRICTION MATERIAL

Andrei Nikiforovich Filippov, pereulok 10, kv. 41, Moscow, U.S.S.R.

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,978

Int. Cl. C10m *7/04, 7/26, 7/30*

U.S. Cl. 252—12 **8 Claims**

1. An antifriction material consisting essentially of a graphite powder, a binder for said graphite, taken in an amount of 22–30% by weight of the graphite powder and consisting of phenol-formaldehyde resin, said graphite powder and said binder together being 30–95 wt. percent of said material; 3% by weight of the binder of an additive said additive consisting essentially of hexamethylenetetramine, stearine and calcium hydroxide; a powder of a plastic non-ferrous metal, selected from the group consisting of lead and tin, 0–60 wt. percent of said material; phenol-anilineformaldehyde resin, 5–40 wt. percent of said material; and a finely dispersed powder of an abrasive material, selected from the group consisting of talc, glass, silica, and chromium oxide, 0.5–5 wt. percent of said material.

3,843,528

ALUMINUM COMPLEX SOAP GREASE CONTAINING CALCIUM CARBONATE

Wayne W. Bailey, Gibsonia, and Paul R. McCarthy, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Sept. 6, 1973, Ser. No. 394,672

The portion of the term of the patent subsequent to Dec. 4, 1990, has been disclaimed

Int. Cl. C10m *5/02, 5/14*

U.S. Cl. 252—18 **7 Claims**

1. A lubricating grease composition comprising a major proportion of a mineral lubricating oil base having an aniline point below about 230° F. thickened to the consistency of a grease with an aluminum complex soap of benzoic acid and a saturated fatty acid having from 20 to 22 carbon atoms per molecule wherein the molar ratio of benzoic acid to C_{20}–C_{22} fatty acid is about 1.25:1 to about 2:1, benzoic acid to C_{20}–C_{22} fatty acid, respectively, and a small amount, sufficient to improve the antiwear and extreme pressure properties of the grease, of precipitated calcium carbonate.

3,843,529

METAL WORKING LUBRICANT COMPOSITIONS

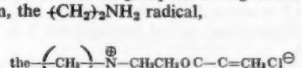
Robert G. Bertrand, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,601

Int. Cl. C10m *3/02, 3/46, 7/50*

U.S. Cl. 252—30 **8 Claims**

1. A lubricant composition consisting essentially of
(a) about 50 to 75 percent by weight of a mixture of solid lubricant particles, the mixture containing from about 50 to 80 weight percent molybdenum disulphide, the remainder being graphite; and
(b) about 25 to 50 percent by weight of a binder consisting essentially of about 40 to 60 weight percent carboxymethylcellulose and about 40 to 60 weight percent of an amine-functional silane of the formula $(RO)_3Si(CH_2)_3NHR'$, hydrolyzates and partial condensates thereof in which R is an alkyl radical containing from 1 to 4 inclusive carbon atoms; and R′ is selected from the group consisting of the hydrogen atom, the $(CH_2)_2NH_2$ radical,



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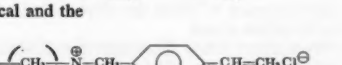


radical.

3,843,530

LIQUID OIL-SOLUBLE NON-CRYSTALLIZING MIXTURES OF ZINC SALTS OF DIALKYL DITHIOPHOSPHATES

Edmund Luke Niedzielski, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,385
Int. Cl. C10m 1/48, 3/42
U.S. Cl. 252—32.7 E 8 Claims

1. An oil soluble non-crystallizing liquid composition containing at least 12% by weight of zinc which comprises zinc salts selected from the group consisting of

(a) mixed basic zinc salts of dialkyl dithiophosphates containing 4 to 13 different alkyl radicals and having an average carbon content of 3.5 to 4.5 carbon atoms of the formula

$$((R)_2PSS)_3Zn_3OH$$

and

(b) mixtures of said basic zinc salts with mixed neutral zinc salts of dialkyl dithiophosphates containing 4 to 13 different alkyl radicals and having an average carbon content of 3.5 to 4.5 carbon atoms of the formula

$$((RO)_2PSS)_2Zn$$

and wherein the alkyl radicals of (a) and (b) are primary or secondary radicals of 1–13 carbon atoms and wherein the concentration of said alkyl radicals are

(1) a maximum of 30 mol percent of each C_1–C_3 alkyl radical

(2) a maximum of 58 mol percent of the combined C_1–C_3 alkyl radicals

(3) a maximum of 70 mol percent of each C_4 alkyl radical

(4) a maximum of 82 mol percent of the combined C_1–C_4 alkyl radicals

(5) a maximum of 25 mol percent of secondary alkyl radicals

and wherein the composition of (b) as to mixed neutral zinc salts is a maximum of 75% by weight of the total mixture of (b).

3,843,531

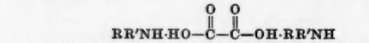
SYNTHETIC AIRCRAFT TURBINE OIL

John W. Nebzydoski and Edwin L. Patmore, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Jan. 31 1973, Ser. No. 328,232
Int. Cl. C10n 3/32, 3/26
U.S. Cl. 252—34.7 11 Claims

1. A synthetic lubricating oil composition comprising a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of a pentaerythritol or trimethylolpropane and a saturated hydrocarbyl monocarboxylic acid having from about 2 to 18 carbon atoms per molecule, containing

A. From about 0.005 to 0.5 weight percent of a dihydrocarbylamine salt of oxalic acid represented by the formula:



in which R is a hydrocarbyl radical having from about 8 to about 22 carbon atoms and R′ is hydrogen or a hydrocarbyl radical having from 1 to 5 carbon atoms

B. From about 0.3 to 5 percent by weight of the lubricating oil composition of an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 22 carbon atoms

C. From about 0.3 to 5 percent of a dialkyldiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms, and

D. From about 0.25 to 10 percent of a trihydrocarbyl phosphate in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms.

3,843,532

POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS

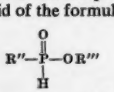
Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Dec. 30, 1970, Ser. No. 102,969, now Patent No. 3,748,269. Divided and this application Feb. 7, 1973, Ser. No. 330,335
Int. Cl. C10m 1/48
U.S. Cl. 252—46.7 2 Claims

1. A lubricant composition consisting essentially of a major amount of a polyphenyl thioether having the formula

$$R—Y(R'—Y)_n—R$$

wherein R is a phenyl group or a substituted phenyl group, R′ is a phenylene group or substituted phenylene group, in which the substituents on said phenyl and phenylene groups are halogen, alkyl or alkoxy containing from 1 to 4 carbon atoms, n is an integer of from 1 to 6, Y is sulfur or oxygen provided that at least one of the groups represented by Y is sulfur, and mixtures of such thioethers and from about 0.05 to about 1.0 percent by weight of an organic phosphinic acid of the formula



wherein R″ is an aryl group of from 6 to 16 carbon atoms, a halogen substituted aryl group of from 6 to 16 carbon atoms, an alkyl substituted aryl group containing from 6 to 16 carbon atoms or an alkyl group containing 1 to 12 carbon atoms, R‴ is hydrogen or an R″ group and from 0.01 to 0.5 percent by weight of monocyclic, monohydric alkyl-substituted phenols.

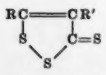
3,843,533

LUBRICANT COMPOSITION CONTAINING SULFURIZED AND CHLORINATED ALKYLENE POLYAMINE REACTION PRODUCT

William P. Cullen, Fishkill, Harry Chafetz, Poughkeepsie, and Walter W. Hellmuth, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 12, 1972, Ser. No. 314,315
Int. Cl. C10n 1/32, 1/38
U.S. Cl. 252—47.5 3 Claims

1. A lubricating composition comprising a major proportion of a mineral oil of lubricating viscosity containing a minor detergent amount of an oil-soluble ashless sulfurized and chlorinated alkylene polyamine reaction product prepared by chlorinating a reaction product of sulfur and a polyolefin containing a trithione using at least a mole of chlorine per mole of trithione at a temperature ranging from about 20 to 95° C. to form a chlorinated intermediate product, said trithione being represented by the formula:



in which R and R′ represent hydrogen or a hydrocarbyl radical having from about 50 to 125 carbon atoms, at least one of R and R′ representing an aliphatic hydrocarbon radical, and, reacting said intermediate product with a polyamine in the proportion of 1 to 5 moles of said polyamine per mole of said intermediate product at a temperature in the range of 100 to 275° C., said polyamine being represented by the formula

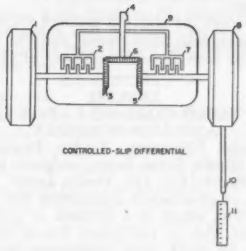
$$H_2N—(R''—NH)_xH$$

in which R″ is a divalent alkylene radical having from 2 to 6 carbon atoms and x is an integer ranging from 1 to 6.

3,843,534
LUBRICATION OF CONTROLLED-SLIP DIFFERENTIAL

David S. Gates, Swarthmore, Paul E. Hagstrom, Valley Forge, and Marcus W. Haseltine, Brookhaven, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Feb. 19, 1971, Ser. No. 116,841
Int. Cl. C10m *1/18, 1/38, 1/46*
U.S. Cl. 252—45 15 Claims



1. In the art of lubrication of a controlled-slip differential which has started to slip extensively due to substantial wear, the improvement wherein the previously used lubricant is replaced by a lubricant consisting essentially of non-hydrocarbon additives and a hydrocarbon base stock having a kinematic viscosity at 210° F. in the range of 1.5–200.0 cs. and consisting essentially of a blend of at least one C_{13}–C_{29} naphthene and from 0.1–20 parts by weight, based on said naphthene of at least one member from at least one of the following groups (a) and (b):

(a) a synthetic liquid C_3–C_8 olefin homopolymer; and

(b) a member from group (a) above which is at least partially hydrogenated;

and wherein the amount of said blend which is present in said base stock is sufficient to provide a greater coefficient of traction, measured at 600 ft./min., 200° F., 400,000 p.s.i., than would be provided by substitution of the same amount of ASTM Oil No. 3 for said blend in said base stock.

3,843,535
LUBRICATING COMPOSITIONS

Jacques Denis, Ville d'Avray, and Guy Parc, Rueil-Malmaison, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants

No Drawing. Continuation-in-part of application Ser. No. 204,329 Dec. 2, 1971, now Patent No. 3,773,668. This application May 25, 1973, Ser. No. 364,066
Claims priority, application France, Dec. 3, 1970, 43,605; Apr. 15, 1971, 13,437
Int. Cl. C10m *1/26*
U.S. Cl. 252—57 41 Claims

1. A lubricating composition of high viscosity index suitable for use as base lubricant for multigrade oils comprising lubricating amounts of a mixture of (A) a hydrocarbon oil of lubricating viscosity selected from the group consisting of the solvent-refined mineral oils, the acid-refined mineral oils, the hydrorefined oils and the synthetic oils obtained by oligomerization of olefinic hydrocarbons having 2–20 carbon atoms and (B) at least one compound complying with the general formula:

$$R_1[—CO—O(R_2—O)_nR_3]_x[—CO—O—R'_3]_{(m-x)}$$

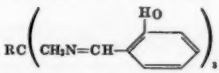
where m is 2 or 3, x is from 0.15 m. to m inclusive; when m is 2, R_1 is the divalent hydrocarbon radical of a dicarboxylic acid selected from the group consisting of unsaturated dicarboxylic acids having 28–44 carbon atoms resulting from dimerization of unsaturated fatty acids of 14–22 carbon atoms, and the corresponding saturated dicarboxylic acids, and when m is 3, R_1 is a trivalent hydrocarbon radical of a tricarboxylic acid selected from the group consisting of unsaturated tricarboxylic acids having 42–66 carbon atoms resulting from trimerization of unsaturated fatty acids of 14–22 carbon atoms, and the cordesponding saturated tricarboxylic acids; R_2 is selected from the alkylene radicals having 2–5 carbon atoms, n is an integer from 2 to 50 and each of R_3 and R'_3 is the monovalent hydrocarbon radical of a compound selected from the group consisting of aliphatic monoalcohols of 1–25 carbon atoms, alicyclic monoalcohols of 3–25 carbon atoms and unsubstituted and alkyl-substituted monophenols of 6–25 carbon atoms, the proportion of said compound (B) with respect to said hydrocarbon oil (A) being sufficient to impart to said composition the desired high viscosity index, and components (A) and (B) together constituting the predominant component of said composition.

3,843,536
METAL-DEACTIVATED ORGANIC COMPOSITIONS AND PROCESS THEREFOR

Thomas E. Johnston, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,395
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 R 11 Claims

1. A composition comprising an organic composition ordinarily susceptible to catalytic oxidation by a metal selected from the group consisting of copper, iron, cobalt, chromium and compounds thereof, selected from the group consisting of gasoline, jet fuel, kerosene, diesel fuel oil, home burner fuel oil, lubricating oil, and lubricating grease, and an effective metal-deactivating amount of a deactivating compound of the formula

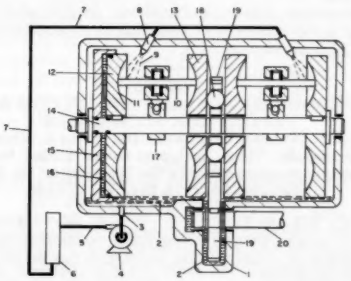


wherein R is hydrogen or an alkyl group of 1 to 20 carbon atoms.

3,843,537
BLENDED TRACTION FLUID CONTAINING CYCLIC COMPOUNDS

Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 679,833, Nov. 1, 1967. This application June 23, 1971, Ser. No. 155,986
Int. Cl. C10m *1/18, 3/10*
U.S. Cl. 252—59 12 Claims



1. A hydrocarbon base stock, useful as a lubricant having a kinematic viscosity at 210° F. in the range of 1.5–200.0 c.s. and comprising a blend of (i) at least one part by weight of a synthetic oil containing at least 95% of C_{13}–C_{40} naphthene and (ii) from 0.1–20 parts by weight,

based on said naphthene of at least one member from at least one of the following groups (a), (b) and (c):

(a) a synthetic liquid C_3–C_8 olefin homopolymer, copolymer, or terpolymer;

(b) a member from group (a) above which is at least partially hydrogenated; and,

(c) a severely hydrorefined naphthenic mineral oil lube or paraffinic mineral oil lube containing less than 1% of gel aromatic hydrocarbons,

and wherein said base stock containing said blend has a coefficient of traction, measured at 600 ft./min., 200° F., 400,000 p.s.i., at least as high as that of ASTM Oil No. 3.

3,843,538

DEVELOPING EMULSION FOR ELECTROSTATIC IMAGES

Marinus Cornelus Vermeulen, Valley View, Ian Edward Smith, Lockleys, and Peter John Hastwell, North Adelaide, Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

No Drawing. Filed July 7, 1972, Ser. No. 269,603

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **4 Claims**

1. A developing emulsion for use in developing a latent electrostatic image including in combination a tacky organosol lipide phase comprising the following by weight:

	Percent
High molecular weight polymer	3.5–5.5
Light hydrocarbon liquid	32.0–52.0
Pigment	0.5–1.5

in which said light hydrocarbon liquid includes about 90% isoparaffinic hydrocarbons and about 10% aromatic hydrocarbons, and a disperse aqueous phase comprising the following by weight:

	Percent
Water	43.0–64.0
Surface-active emulsifying agent	0.01–0.15
Antifoam agent	0.01–0.15

said high molecular weight polymer being dissolved in said aromatic hydrocarbon liquid.

3,843,539

ELECTROLYTIC SOLUTION FOR LEVEL DEVICES

Robert Willing and Gary L. Cooper, Anaheim, Calif., assignors to North American Rockwell Corporation

Filed June 26, 1972, Ser. No. 266,010

Int. Cl. H01g *9/02*

U.S. Cl. 252—62.2 **1 Claim**

1. An electrolytic solution for a level indicating device, consisting essentially of:

a fluid consisting of approximatey 40–60 parts by volume of ethyl alcohol and the rest methyl alcohol; and

ammonium carbonate of sufficient concentration to adjust the resistivity of said fluid to approximately 70–2500 ohm-cm. at 24° C.

3,843,540

PRODUCTION OF MAGNETIC FLUIDS BY PEPTIZATION TECHNIQUES

George W. Reimers, Burnsville, and Sanaa E. Khalafalla, Minneapolis, Minn., assignors to the United States of America as represented by the Secretary of the Interior

Filed July 26, 1972, Ser. No. 275,382

Int. Cl. H01j *1/28*

U.S. Cl. 252—62.52 **26 Claims**

1. A process for producing magnetic fluids from aqueous industrial waste streams containing ferrous iron salts which comprises:

oxidizing a portion of the ferrous iron contained in the waste stream to the ferric state;

reacting the waste stream, now containing ferrous and ferric iron salts, with an excess of ammonium hydroxide to precipitate a slurry of colloidal size ferroso-ferric iron oxide particles;

adding a long chain fatty acid having about 18 carbon atoms to the iron oxide particle slurry whereby the fatty acid reacts with ammonium hydroxide to form an ammonium salt of the fatty acid and to thereafter coat iron oxide particles contained in the slurry with an adsorbed layer of ammoniated fatty acid;

heating the slurry to a temperature above the decomposition temperature of the ammoniated fatty acid to convert the adsorbed layer of ammoniated fatty acid to the acid form and to expel ammonia from the slurry, and

recovering from the slurry a product fraction comprising ferrimagnetic iron oxide particles of colloidal size coated with an adsorbed layer of fatty acid.

3,843,541

MAGNETIC HEAD CORE OF LARGE GRAIN SIZE AND LOW POROSITY

Hiroyuki Chiba, Neyagawa, Yoshio Tawara, Kadoma, and Eiichi Hirota, Sakai, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of abandoned application Ser. No. 29,355, Apr. 20, 1970, which is a division of application Ser. No. 614,889, Feb. 9, 1967, now Patent No. 3,557,266, dated Jan. 19, 1971. This application Mar. 14, 1973, Ser. No. 341,491

Int. Cl. C04b *35/26, 35/30, 35/38*

U.S. Cl. 252—62.57 **3 Claims**

1. A magnetic head core consisting essentially of sintered ferrite consisting of a plurality of grains, having an average grain size greater than 30 μ and a porosity less than 0.1% by volume, and having a composition consisting of Ni-Zn ferrite, Mn-Zn ferrite, Li-Zn ferrite, Cu-Zn ferrite, Mg-Zn ferrite or Y-iron garnet.

3,843,542

HYDRAULIC OIL

John H. Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 31, 1972, Ser. No. 276,866

Int. Cl. C09k *3/00*

U.S. Cl. 252—75 **8 Claims**

1. A hydrocarbon-based hydraulic fluid comprising a major amount of a hydrocarbon lubricating oil having a viscosity of 100 to 650 SUS at 100° F. and containing from 0.1 to 1.5 weight percent zinc di(primary iso-octyl) dithiophosphate and from 0.03 to 0.2 parts of a C_6 to C_{24} alkenyl succinic acid per weight part of said zinc dithiophosphate; with the proviso that when the concentration of said zinc dithiophosphate is from 1.0 to 1.5 weight percent then 0.01 to 1 part of a metal deactivator selected from triaryl or trialkyl phosphates, aryl or alkyl phosphites, alkylphenol sulfides, phosphorus pentasulfide-terpene addition products, benzotriazole, phenothiazine, bis-octyl dithiathiadiazole, phenyl-1-naphthylamine or mixtures thereof per part of said zinc dithiophosphate is present.

3,843,543

SOAP CURD DISPERSANT

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,194

Int. Cl. C11d *1/52, 3/34, 3/44*

U.S. Cl. 252—153 **4 Claims**

1. A liquid soap curd dispersant for use as a rinse additive consisting essentially of a mixture of lauric dimethyl amide and myristic dimethyl amide in a weight ratio of from about 7:3 to about 3:7, a hydrotrope, an organic solvent, and water, said hydrotrope being selected from the group consisting of sodium and potassium xylene sulfonates, cumene sulfonates, benzene sulfonates, ethylbenzene sulfonates, alkyl naphthalene sulfonates wherein the alkyl group contains from 1–6 carbon atoms, and lower alkyl sulfates wherein the lower alkyl group contains from 1–6 carbon atoms, the organic solvent being

selected from the group consisting of ethanol, isopropanol, and propylene glycol, said mixture of lauric dimethyl amide and myristic dimethyl amide being present in amounts ranging from about 10% to about 60%, the hydrotrope being present in amounts ranging from about 5% to about 25%, and the organic solvent being present in amounts ranging from about 5% to about 25%, the balance of said additive being water.

3,843,544

CLEANING SOLUTION

Nick Kappas, 5486 Madison St., Gary, Ind. 46408

Original application July 2, 1969, Ser. No. 838,406, now Patent No. 3,625,762. Divided and this application Mar. 8, 1971, Ser. No. 122,177

Int. Cl. C11d 7/06

U.S. Cl. 252—156 4 Claims

1. A composition of matter consisting of a silicate-caustic cleaning solution for cleaning metal articles successively drawn through said cleaning solution including water, about 2.5 to about 4.0 liquid ounces of a caustic and water solution for each gallon of water, said caustic solution having a density of about 11.67 pounds per gallon, and about 1.5 to about 4.0 liquid ounces of a sodium silicate and water solution for each gallon of water, said sodium silicate solution having a density of about 12.67 pounds per gallon, both said caustic and sodium silicate being commercial grade chemicals, said caustic and sodium silicate solutions and water being the major part of said silicate-caustic cleaning solution.

3,843,545

WATER STERILIZING COMPOSITION AND TABLETS

Kevin Hague Heuston, Tasmania, Australia, assignor to Commonwealth of Australia, % Department of the Army, Canberra, Australian Capital Territory

No Drawing. Filed Jan. 23, 1973, Ser. No. 326,148

Claims priority, application Australia, Jan. 27, 1972, 7,782

Int. Cl. C02b 1/34

U.S. Cl. 252—181 7 Claims

1. A composition for sterilizing water consisting essentially of:

(a) 1 to 5 parts by weight of an oxidizing agent selected from the group consisting of potassium dichromate, potassium permanganate and mixtures thereof;

(b) 10 to 50 parts by weight of at least one acid selected from the group consisting of tartaric, citric and adipic acids;

(c) 10 to 50 parts by weight of an iodide chosen from the group consisting of sodium iodide, potassium iodide and mixtures thereof;

(d) 10 to 50 parts by weight of an iodate chosen from the group consisting of sodium iodate, potassium iodate and mixtures thereof.

3,843,546

PROCESS FOR FLUORINATING CHLOROALKANES AND FLUORINATING COMPOSITION THEREFOR

Igor Sobolev, Orinda, and Erwin Panusch, Livermore, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 12, 1973, Ser. No. 350,594

Int. Cl. C01b 7/20; C07c 19/08

U.S. Cl. 252—182 8 Claims

1. A free-flowing, non-agglomerating fluorinating agent for the vapor-phase, stirred-bed fluorination of chloroalkanes having up to two carbon atoms at temperatures between about 200° C. and 450° C., which consists essentially of an intimate mixture of sodium fluoroferrate (Na_3FeF_6) and particulate carbon, substantially free of inorganic oxides and volatile components, wherein the sodium fluoferrate to carbon weight ratio is within the range of 1:1 and 1:9 and the particle size of the carbon being within the range of about 0.05–1.7 mm.

3,843,547

COMPOSITION FOR ACCELERATING OXYGEN REMOVAL COMPRISED OF AN AQUEOUS SOLUTION OF HYDRAZINE CONTAINING A MIXTURE OF AN ARYL AMINE COMPOUND AND A QUINONE COMPOUND

John D. Kaufman, Prospect, Henry W. Schiessl, Northford, and David A. Csejka, Orange, Conn., assignors to Olin Corporation

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,287

Int. Cl. C02b 1/18; C23f 11/14

U.S. Cl. 252—184 17 Claims

1. An oxygen-scavenging composition consisting essentially of an aqueous solution of hydrazine containing a catalytic proportion of a mixture of

(a) an aryl amine compound selected from the group consisting of
  (1) aminophenol
  (2) N-alkyl aminophenol wherein the alkyl group contains from 1 to about 4 carbon atoms
  (3) toluene diamine
  (4) phenylene diamine, and
  (5) sulfates of said aryl amine compound of a(1)–a(4)

(b) a quinone compound selected from the group consisting of
  (1) quinone
  (2) naphthoquinone
  (3) anthraquinone, and
  (4) hydroxy substituted quinone of b(1)–b(3)

(c) wherein the weight ratio of said aryl amine compound to said quinone compound is from about 10:1 to about 300:1, and

(d) the weight ratio of said hydrazine to said quinone compound is from about 2000:1 to about 10,000:1.

3,843,548

COMPOSITIONS CONTAINING A SOURCE OF HYPOCHLORITE IONS

Ronald James, Ruislip, England, assignor to Wilkinson Sword Limited, London, England

Filed Sept. 28, 1971, Ser. No. 184,510

Claims priority, application Great Britain, Oct. 6, 1970, 47,354/70

Int. Cl. C11d 7/54

U.S. Cl. 25—187 H 11 Claims

1. A composition consisting essentially of a water-absorptive clay and a source of hypochlorite ions, said source of hypochlorite ions being a member selected from the group consisting of alkali metal hypochlorites, alkali metal salts of non-metallic inorganic acids, and organic acids containing a thermodynamically stable nitrogen-chlorine bond which hydrolyses to provide hypochlorite ions, wherein said water-absorptive clay is a synthetic magnesium silicate in which a proportion of the magnesium atoms have been replaced by lithium atoms, said synthetic magnesium silicate being present in an amount of from about 3% to 8% by weight, the amount of said source of hypochlorite ions being such that the available chlorine content of said composition is from 0.05% to 3.0% by weight.

3,843,549

CHEMILUMINESCENT COMPOSITIONS CONTAINING POLYCARBONYL COMPOUNDS

Laszlo Joseph Bollyky, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation of abandoned application Ser. No. 844,657, July 24, 1969. This application Dec. 23, 1971, Ser. No. 211,810

Int. Cl. C09k 3/00

U.S. Cl. 252—188.3 CL 4 Claims

1. A composition for obtaining chemiluminescent light by reaction with a hydroperoxide, said composition containing,

(1) a compound of the formula:

A—B—C

in which B is a polycarbonyl group which is a substituent of each A and C, B being of the formula

wherein "*n*" is an integer at least one, in which A is a nitrogen-containing heterocyclic group

where Q′ is a hydro-group, Q^2 is an oxo-group, each of *m* and *p* is at least one, and *m* is greater than *p*, said terminal carbonyl group of said B being linked to the nitrogen atom of said A, and in which C is a compound selected from the group consisting of (1) said A, (2) an alcohol forming an ester with a terminal carbonyl group of said B, and (3) an amine which forms an amide with a terminal carbonyl group of said B,

(2) at least one organic fluorescent compound, and

(3) an organic solvent, the ratio of reactants being such as to obtain visible chemiluminescence.

3,843,550

PHOTOCHROMIC COMPOSITION

Alain Hinnen, Vauhallan, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

No Drawing. Filed Oct. 23, 1968, Ser. No. 770,118
Claims priority, application France, Oct. 24, 1967, 125,642
Int. Cl. F21v *9/00*; G02b *5/24*
U.S. Cl. 252—300 **2 Claims**

1. A light-sensitive composition including as the essential photochromic sensitive element 1,3,3, trimethyl indolino-2-spiro-2′-methyl-8′-cumarino (7,8,b) pyran.

3,843,551

GLASS CERAMIC AS AN ACTIVE LASER MATERIAL

Gerd Muller, Mainz-Weisenau, and Norbert Neuroth, Stollhenn, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

Filed Feb. 15, 1973, Ser. No. 332,938
Claims priority, application Germany, Feb. 18, 1972, P 22 07 634.2
Int. Cl. C03e *3/22*; C09k *1/54*; H01s *3/16*
U.S. Cl. 252—301.4 F **4 Claims**

1. A laserable article consisting essentially of transparent, substantially scatter-free glass ceramic as host material containing activating agent rendering the article capable of induced emission and luminescence, of the following composition on the oxide basis:

	Weight percent
SiO_2	45–68
Al_2O_3	15–30
P_2O_5	0–10
Li_2O	2–6
MgO	0–3
ZnO	0–8
ZrO_2	2–7
Ta_2O_5	1–7
La_2O_3	3–12
Activating agent	0.1–5

the activating agent being at least one of MnO and rare earth oxides selected from Eu_2O_3, Sm_2O_3, Tb_2O_3 and Nd_2O_3, the article being at least 25% crystalline by weight of which the principal crystalline phase has a high quartz structure, and the article having a linear coefficient of thermal expension of not more than $15 \cdot 10^{-7}$ ° C. measured over 20–300° C.

3,843,552

CATALYST FOR OXIDATION OF o-XYLENE

Marcel Jouy, Saint Cyrl Ecole, and Michel Coblentz, Chauny, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,502
Claims priority, application France, Aug. 26, 1970, 7031182; July 19, 1971, 7126273
Int. Cl. B01j *11/40, 11/82*
U.S. Cl. 252—432 **16 Claims**

1. A catalyst for the preparation of phthalic anhydride by oxidation of ortho-xylene in the gaseous phase comprising a support impregnated with a silcate enamel and a coating of catalytically active material on the enamelled support.

3,843,553

CATALYST COMPOSITIONS OF SCHEELITE CRYSTAL STRUCTURE CONTAINING BISMUTH IONS, DIVALENT IONS AND CATION VACANCIES

Kamran Aykan, Woodbury, N.J., and Donald B. Rogers and Arthur W. Sleight, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 75,237, Sept. 24, 1970. This application Oct. 4, 1971, Ser. No. 186,409
Int. Cl. B01j *11/06*
U.S. Cl. 252—464 **14 Claims**

1. A catalyst which has scheelite type crystal structure of the general formula

$$A_{1-z}\square_z BO_4$$

wherein

A represents cations having ionic radii in the range of about 0.9 to about 1.6 A. some of which are trivalent bismuth and (1) at least one other is selected from the group consisting of lead, calcium, strontium, barium, cadmium and mercury; or (2) a cation selected from the group consisting of sodium, lithium, potassium and yttrium and at least one other selected from the group consisting of lead, calcium, strontium, barium, cadmium and mercury;

B represents cations having ionic radii in the range of about 0.9 to about 1.6 A. some of which are trivalent molybdenum and tungsten, with the proviso that when A represents bismuth and lead, B can represent tungsten alone;

$\square$ represents a cation vacancy in the crystal structure; and

z represents a positive number in the range of about 0.001 to about 0.075.

3,843,554

CATALYST COMPOSITIONS OF SCHEELITE CRYSTAL STRUCTURE CONTAINING VANADIUM, BISMUTH AND CATION VACANCIES

Kamran Aykan, Woodbury, N.J., and Donald B. Rogers and Arthur W. Sleight, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 75,237, Sept. 24, 1970. This application Oct. 4, 1971, Ser. No. 186,407
Int. Cl. B01j *11/06*
U.S. Cl. 252—468 **4 Claims**

1. A catalyst which has scheelite-type crystal structure of the formula $A_{1-z}\square_z BO_4$ wherein

A represents cations having ionic radii in the range of

about 0.9 to about 1.6 °A, some of which are trivalent bismuth, and at least one other is selected from the group consisting of lead, calcium, strontium, barium, zirconium and hafnium;

B represents cations having ionic radii in the range of about 0.3 to about 0.5 °A comprising vanadium or vanadium and molybdenum;

□ represents a cation vacancy in the crystal structure; and

z is a positive number in the range of about 0.001 to about 0.15.

3,843,555

PROCESS FOR THE MANUFACTURE OF A COBALT MOLYBDATE CATALYST

Heinz Erpenbach, Surth, Klaus Gehrmann, Hurth-Knapsack, Winfried Lork, Erftstadt Friesheim, and Peter Prinz, Hurth-Burbach, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Aug. 31, 1973, Ser. No. 393,434
Claims priority, application Germany, Sept. 5, 1972, P 22 43 583.2
Int. Cl. B01j *11/22*
U.S. Cl. 252—470 5 Claims

1. In a process for making a cobalt molybdate catalyst, wherein cobalt molybdate is precipitated from the combined aqueous solutions of a cobalt salt, of a molybdenum compound and of ammonia at a temperature of about 60° C. and at a pH of at most 7, the resulting precipitate is filtered off, washed and dried at a temperature of at least 100° C., the resulting dry cobalt molybdate is heated for several hours at elevated temperatures, ground, shaped and the resulting shapes of cobalt molybdate are sintered for several hours, the improvement which comprises combining an aqueous solution of the cobalt salt with that of the molybdenum compound in the atomic artio of Co:Mo of about 1.05:1; establishing in the combined solutions a pH between 3.8 and 6.0; drying the precipitate at 110–170° C.; heating the dry cobalt molybdate to temperatures between 250 and 550° C.; and sintering the cobalt molybdate shapes at temperatures between 500 and 700° C with the resultant formation of a cobalt molybdate catalyst having an inner surface area between 4 and 8 square meters/g. and a volume of pores between 0.1 and 0.2 milliliters/g.

3,843,556

PREPARATION OF ALKALINE EARTH METAL HALOPHOSPHATE PHOSPHORS

Armand J. Panson and Roswell J. Ruka, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 71,204, Sept. 10, 1970. This application Dec. 19, 1972, Ser. No. 316,638
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.6 P 8 Claims

1. Method of preparing alkaline-earth metal halophosphate phosphor which exhibits the apatite crystal structure, which method comprises:

(a) separately preparing a first aqueous solution containing as an essential constituent an alkaline-earth metal compound and a second aqueous solution containing as an essential constituent phosphate radical, a metal activator containing compound or compounds being included in one or both of said solutions, the atom ratio of total alkaline-earth metal to total activator metal being substantially that as desired in said phosphor, the amount of phosphate radical being at least such as to react completely with about 90% of the total alkaline-earth metal and activator metal to form an orthophosphate, and chlorine and/or fluorine being present in an amount sufficient to react with substantially all of the remaining alkaline-earth metal, with the pH of said solutions being approximately equal and at a value of from about 5 to 6;

(b) heating each solution to approximately boiling temperature and admixing each while maintaining the pH of the resulting mixture at a value of from about 2 to 7, whereby apatite structured, activator doped alkaline-earth metal halogen-phosphate is precipitated; and

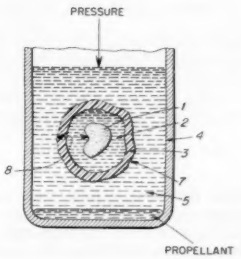
(c) separating said precipitate from said resulting mixture and heating said precipitate to about 900°–1200° C. to optimize its luminescence.

3,843,557

MICROCAPSULES AND METHOD OF MAKING SAME

Gene O. Fanger, Slate Hill, N.Y., James E. Flinn, Columbus, Ohio, Ralph G. Hollingsworth, Ann Arbor, Mich., and Herman Nack, Columbus, Ohio, assignors to The Mennen Company, Inc., Morristown, N.J.

Filed Oct. 5, 1971, Ser. No. 186,699
Int. Cl. B01j *13/02;* B44d *1/16*
U.S. Cl. 252—316 15 Claims



1. A microcapsule resistant to penetration by water and other polar liquids which comprises a solid, water sensitive core and a wall, said wall comprising a first layer of a hydrocarbon or halogenated hydrocarbon liquid and a second layer of a film-forming water-insoluble polymeric organic material insoluble in and substantially non-swellable by but permeable to hydrocarbon and halogenated hydrocarbon solvents.

3,843,558

FOAM CONTROL SUBSTANCE

Kenneth Wilfrid Farminer and Christopher Miles Brooke, Glamorgan, Wales, assignors to Dow Corning Limited, Whitehall, London, England

No Drawing. Filed June 16, 1972, Ser. No. 263,516
Claims priority, application Great Britain, July 1, 1971, 30,964/71
Int. Cl. B01d *19/04;* C11d *3/16*
U.S. Cl. 252—358 1 Claim

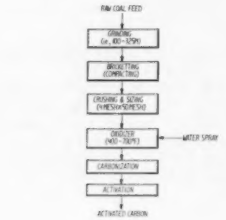
1. A foam control substance consisting essentially of powdered or granular sodium tripolyphosphate having on the surface thereof an antifoam composition consisting essentially of a mixture of (1) dimethylpolysiloxane, (2) a diorganopolysiloxane in which the silicon-bonded organic radicals are methyl, ethyl and 2-phenylpropyl and said ethyl and 2-phenylpropyl groups comprise less than about 50 percent of the total silicon-bonded radicals in the diorganopolysiloxane, (1) and (2) being present in about equal proportions and being in the viscosity range from 50 to 5000 cs. at 25° C. and (3) from 1 to 10 percent by weight based on the weights of (1) and (2) of silica which has a surface area of at least 50 $m.^2/g.$, the mixture of (1), (2) and (3) being present in amount of from 10 to 60 percent by weight based on the weight of the tripolyphosphate.

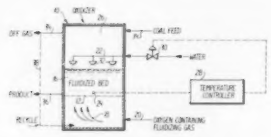
3,843,559

PROCESS FOR MAKING ACTIVATED CARBON FROM AGGLOMERATIVE COAL WITH WATER INJECTION TEMPERATURE CONTROL IN A FLUIDIZED OXIDATION STAGE

Albert J. Repik, 1335 Winchester Drive, Charleston, S.C. 29407; Charles E. Miller, 509 Pelser Drive, Mount Pleasant, S.C. 29464; and Homer R. Johnson, 81½ E. Bay St., Charleston, S.C. 29401

Filed Oct. 2, 1972, Ser. No. 294,468
Int. Cl. C01b *31/08*
U.S. Cl. 252—421 6 Claims





1. A process for treating high rank, medium volatile bituminous coal consisting essentially of:

(a) preparing said coal for oxidation in a fluidized state, said preparation consisting essentially of;

(1) grinding said coal to a particle size between 100 mesh to 325 mesh,

(2) briquetting said ground coal,

(3) crushing said briquettes to a particle size from about ¼ inch to 100 mesh and a porosity of 0.05 cc./gm. to 0.20 cc./gm.,

(b) fluidizing said prepared coal particles with a gas containing from about 1% to about 50% oxygen at a temperature from about 400° F. to about 700° F. until the oxidation number is at least 85,

(c) injecting water into the fluidized solid/gas mixture of said fluidized coal particles to control the temperature,

(d) carbonizing said oxidized coal at a temperature in the range of about 1000° F. to about 1200° F.;

(e) activating said oxidized-carbonized coal with an activating gas from the group consisting of steam and an oxygen containing gas at a temperature in the range of about 1650° F. to about 1950° F.; and

(f) recovering an activated carbon product.

3,843,560

MULTICOMPONENT DEHYDROGENATION CATALYST CONTAINING PLATINUM, IRIDIUM, ALKALI OR ALKALINE EARTH METAL OXIDE, AND SULFUR

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Feb. 1, 1972, Ser. No. 222,675, now Patent No. 3,763,255, dated Oct. 2, 1973, which is a continuation-in-part of abandoned application Ser. No. 38,572, May 18, 1970. Divided and this application Dec. 20, 1972, Ser. No. 316,933
Int. Cl. B01j *11/08, 11/74*
U.S. Cl. 252—439 9 Claims

1. A catalytic composite comprising a combination of catalytically effective amounts of platinum metal, iridium metal, an alkali or alkaline earth metal oxide and from about 0.05 to about 0.5 wt. percent sulfur with a porous carrier material, wherein the platinum and iridium are uniformly dispersed in the carrier material, wherein the platinum and iridium are present in amounts selected to result in an atomic ratio of iridium to platinum of about 0.5:1 to about 1.5:1 and wherein the composite is prepared by the steps of:

(a) forming a sulfur-free composite of oxidizable platinum, iridium and alkali or alkaline earth metal compounds with a porous carrier material and uniformly dispersing the iridium and platinum compounds in the carrier material;

(b) subjecting the resulting composite to contact with a sulfur-free, oxygen-containing gas stream at oxidation conditions selected to oxidize the platinum, iridium and alkali or alkaline earth metal compounds to oxides;

(c) contacting the resulting oxidized composite with a sulfur-free hydrogen stream at reduction conditions selected to reduce both the platinum and iridium oxides to the elemental metallic state; and thereafer

(d) presulfiding the composite to incorporate therein from about 0.05 to about 0.5 wt. percent sulfur.

3,843,561

MAT OF INORGANIC OXIDE FIBERS, ITS METHOD OF PREPARATION AND ITS IMPREGNATION WITH CATALYTIC MATERIALS

Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 36,732, May 13, 1970. This application Aug. 22, 1972, Ser. No. 282,797
Int. Cl. B01j *11/06, 11/12*
U.S. Cl. 252—465 10 Claims

1. An annular form fluid pervious mat of fibrous material that is suitable for the contact of a fluid flow therethrough, which comprises, a plurality of recrossing helically wound layers of long, flexible, porous high surface area refractory inorganic oxide fiber, with said fiber having been prepared by forming a non-hollow fiber from a mixture of a refractory inorganic oxide sol and a fiber-forming organic polymer and by subsequently calcining the fiber at a temperature of from about 300 to about 1000° C. to burn off the fiber-forming organic polymer portion of the composite.

3,843,562

PROCESS FOR THE PRODUCTION OF A CATALYST SUITABLE FOR THE OXIDATION OF METHANOL TO FORMALDEHYDE

Heinz Friedrich and Walter Neugebauer, Constance, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Aug. 31, 1972, Ser. No. 285,540
Claims priority, application Germany, Sept. 14, 1971, P 21 45 851.5
Int. Cl. B01j *11/22*
U.S. Cl. 252—469 24 Claims

1. A process of preparing a catalyst suitable for oxidizing methanol with an oxygen containing gas to form formaldehyde, said catalyst having an MoO_3:Fe_2O_3 weight ratio of between 1:1 and 10:1 comprising coprecipitating molybdenum and iron as molybdenum oxide and iron oxide from an aqueous mixture of a molybdenum salt containing molybdenum in an anionic form and an iron salt which is a water soluble ferrous or ferric salt, mixing titanium dioxide in an amount of 1 to 90 weight percent of the total oxides with the coprecipitate and treating the mixture at 350 to 600° C. in an oxidizing atmosphere.

3,843,563

DETERGENT COMPOSITIONS

James Francis Davies, Wirral, Charles Rowland Gauterin, Farndon, and William Frederick Soutar Neilie, Birkenhead, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,808
Claims priority, application Great Britain, Apr. 2, 1971, 8,505/71
Int. Cl. C11d *3/26*
U.S. Cl. 252—547 13 Claims

1. A solid detergent composition consisting essentially of from about 5 to 25% by weight of a mixture of (a) an amine oxide detergent active compound having the formula $R_1R_2R_3N\rightarrow O$ where R_1 is a C_{10}–C_{22} alkyl or alkenyl group or a C_8–C_{18} alkyl benzyl group or a C_8–C_{18} alkyl amido group and R_2 and R_3 are C_1–C_4 alkyl groups or C_2–C_3 hydroxyalkyl groups or where R_2 and R_3 are conjoined to form a heterocyclic ring with the nitrogen atom, and (B) a nonionic detergent active compound which is a condensation product of an aliphatic alcohol or an alkyl phenol with ethylene oxide, the ratio of the amine oxide to the nonionic detergent active compound being from about 3:1 to 1:10 parts by weight, from about 25% to 75% by weight of an alkali metal carbonate detergency builder, and from about 10% to about 50% by weight of finely ground calcium carbonate.

3,843,564

DETERGENT COMPOSITIONS AND METHODS OF OBTAINING THEM

Claude Marty, Le Havre, Jean Maurin, Montivilliers, and Joseph Edouard Weisang, Le Havre, France, assignors to Compagnie Francais de Raffinage, Seine, France

Filed Feb. 16, 1971, Ser. No. 115,488
Claims priority, application France, Feb. 16, 1970, 7005438
Int. Cl. C11d *1/14, 1/37, 11/04*
U.S. Cl. 252—552 7 Claims

1. A method for producing alkyl sulfates and mixtures of olefinic sulfonates and also orthodialkyl benzene sulfonates having detergent and biodegradable properties with superior foam stability, which method comprises the steps of:

(a) Treating normal paraffin hydrocarbons having between 14 and 24 carbon atoms with a cyclicizing nonisomerizing dehydrogenation catalyst chosen from the group consisting of: chromium oxide and potassium oxide, deposited on alumina; platinum, lithium and arsenic deposited on alumina; and copper, potassium, and chromium deposited on alumina; in the presence of hydrogen to yield a substantial amount of olefins and saturated straight chain orthodialkyl benzene hydrocarbons;

(b) Separating hydrogen and cracking products of the said normal paraffin hydrocarbons from the efflux;

(c) Sulfating at least a part of the olefin hydrocarbons resulting from the dehydrogenation of the normal paraffin hydrocarbons by contact of the said olefins with sulfuric acid of a concentration of more than 90 percent for a period of time between 1 and 10 minutes, at a temperature below 25° C.;

(d) Neutralizing the effluent of the sulfating step by addition of an alkaline base selected from the group consisting of alkali metal hydroxides and ammonia;

(e) Hydrolyzing the products thus neutralized with an alkaline base selected from the group consisting of alkali metal hydroxides and ammonia to convert sulfuric esters present in the products from the products from the sulfating step to sulfates wherein an organic phase and an aqueous phase are produced;

(f) Subjecting the remaining efflux from step (b) not utilized in step (c) and the organic phase from step (e) to sulfonation;

(g) Neutralizing the sulfonation products from step (f) by addition of an alkaline base selected from the group consisting of alkali metal hydroxides and ammonia;

(h) Hydrolyzing the products thus neutralized with an alkaline base selected from the group consisting of alkali metal hydroxides and ammonia, to convert sultones present in the products to sulfonates;

(i) Recycling to the dehydrogenation step the organic phase which consists of normal paraffins, and the small quantities of naphthene, olefin, and aromatic hydrocarbons obtained by settling after the hydrolyzing step.

3,843,565

EPOXY RESINS CONSISTING ESSENTIALLY OF N,N,N',N'-TETRAGLYCIDYL BISAMINOMETHYLCYCLO-HEXANE

Yasuo Yamamoto, Kyoto, and Keizo Masawaki, Hiratsuka, Japan, assignors to Mitsubishi Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Sept. 25, 1973, Ser. No. 400,681
Claims priority, application Japan, Sept. 28, 1972, 47/96,582
Int. Cl. C08g *30/08, 30/14*
U.S. Cl. 260—2 EP 18 Claims

1. An epoxy resin which consists essentially of N,N,N',N' - tetraglycidyl bisaminomethylcyclohexane, and which has a coloration degree of less than 2 in terms of the Gardner color number, a viscosity at 25° C. of 2,000 to 8,000 cps., an epoxy equivalent of 100 to 150, and a halogen content of less than 1.5%.

3,843,566

MACRORETICULAR VINYL BENZYL CHLORIDE POLYMERS

James H. Barrett, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Apr. 16, 1973, Ser. No. 351,708
Int. Cl. C08d *19/00, 19/20*
U.S. Cl. 260—2.1 E 22 Claims

1. A crosslinked macroreticular polymer of vinylbenzyl chloride containing from 0.1 to 30% by weight of crosslinker.

3,843,567

CHELATING AMINO ACID ADDITION POLYMER

Yoshiki Matsunaga, Sagamihara, and Takaharu Itagaki, Yoshimichi Kobayashi, and Tsugio Katsuura, Yokohama, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

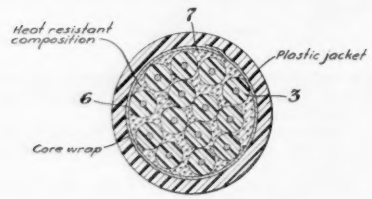
No Drawing. Filed Nov. 30, 1972, Ser. No. 310,813
Int. Cl. C08g *33/06*
U.S. Cl. 260—2.2 R 8 Claims

1. A chelating amino acid addition polymer obtained by a process which comprises reacting an acryloyl compound containing at least two acryloyl groups, wherein the acryloyl compound is selected from the group consisting of alkylene bisacryl-amides, alkylene bismethacryl-amides, methylene bisacryl-amides, methylene bismethacryl-amides, dihydroxy alkylene bisacryl-amide, dihydroxy alkylene bismethacryl-amide, alkyleneglycol diacrylates, alkyleneglycol dimethacrylates, alkylenepolyol polyacrylates, bisacrylamidomethylimidazolidone, alkylenepolyol polymethacrylates and hexahydro - s - triazine derivatives containing at least two acryloyl groups at any two of the 1, 3 and 5-positions with an amino acid containing at least two active hydrogen atoms of which two are bonded to the nitrogen atom of the amino acid, wherein the amino acid is selected from the group consisting of glycine, α-alanine, glutamic acid, aspartic acid, β-alanine, N,N- (or N,N'-) dimethyl lysine, ethylene diamine-N,N- or (N,N'-) diacetic acid, N,N-bis (hydroxyethyl) glycine, lysine, alginine, ornithine, threonine, cysteine and serine.

3,843,568
HEAT RESISTANT COMPOSITIONS

Paul C. Woodland, and Daniel Moldovan, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 104,594, Jan. 7, 1971, Pat. No. 3,683,104. This application May 15, 1972, Ser. No. 253,096
Int. Cl. B01j 13/02; C08j 1/14; H01b 7/00
U.S. Cl. 260—2.5 B 5 Claims



1. A heat resistant composition comprising:
a. a major amount of petrolatum;
b. a minor amount of a partially cross-linked polymer having a solubility parameter within about 0.5 unit of the solubility parameter of said petrolatum and characterized by being capable of becoming swelled by said petrolatum; said amounts based on the total of (a) and (b); and
c. a multitude of hollow, synthetic thermoplastic particles.

3,843,569
HALOGENATED ACETALS AS FLAME RETARDANTS FOR POLYURETHANE FOAMS

John S. Babiec, Jr., and Richard J. Turley, both of Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sept. 24, 1973, Ser. No. 400,385
Int. Cl. C08g 51/58, 22/44; C07c 43/30
U.S. Cl. 260—2.5 AJ 6 Claims

1. A polyurethane foam prepared from a reaction mixture comprising, as a flame retardant additive, a halogenated acetal represented by the formula

$$X_a R[CH(OCH_2CHClCH_2CCl_3)_2]_n$$

wherein
X is chlorine, bromine, or a mixture thereof,
a is an integer of 0 to 4,
R is selected from the group consisting of hydrogen, and alkyl group of 1–12 carbon atoms, and an alkene group of 2–12 carbon atoms, and n is 1 or 2.

3,843,570
PROCESS FOR PRODUCING A POROUS MATERIAL OF POLYTETRAFLUOROETHYLENE

Naohiro Murayama, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 138,279, April 28, 1971, abandoned. This application Jan. 25, 1974, Ser. No. 436,489
Int. Cl. C08j 1/28
U.S. Cl. 260—2.5 M 8 Claims

1. A process for producing a porous article of polytetrafluoroethylene having fine and uniform pores, which comprises polymerizing a polymerizable monomer which has been adsorbed or attached to fine particles of polytetrafluoroethylene and is capable of forming a thermoplastic resin, the amount of said polymerizable monomer being at least 30 percent by weight based on said polytetrafluoroethylene, thereby forming a polymeric mixture of polytetrafluoroethylene and the thermoplastic resin formed by polymerization, milling said polymeric mixture at a temperature higher than the softening point of the thermoplastic resin to form a shaped article comprising a fibrous material having a network structure, and thereafter removing said thermoplastic resin from said shaped article to produce a porous polytetrafluoroethylene article having fine and uniform pores.

3,843,571
GLAMOUR POWDER COATING COMPOSITION CONTAINING AT LEAST TWO DIFFERENT COLORED POWDERS AND REFLECTIVE FLAKES

Emerson B. Fitzgerald, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1971, Ser. No. 210,241
Int. Cl. C08b 21/08
U.S. Cl. 260—17 R 9 Claims

1. A powder coating composition consisting essentially of finely divided particles having a particle size of 1–75 microns of

1. 95.0–99.9 percent by weight, based on the weight of the powder coating composition, of a blend of at least two differently colored powder particles capable of adhering to one another to form a continuous film wherein the powder particles consist essentially of 70–99.9 percent by weight of a film-forming binder and 0.1–30 percent by weight of colorant particles and

when the powder particles are formed into a film about 50 microns thick transmit at least 10 percent of the light of the visible wave length of 4000–7000 Angstroms; and

2. 0.1–5.0 percent by weight, based on the weight of the powder coating composition of individual aluminum flake pigment particles having a particle size below 200 mesh;

wherein the film-forming binder of the colored particles is a thermoplastic polymer consisting essentially of

A. 40–90 percent by weight of an acrylic polymer selected from the group consisting of

a homopolymer of an alkyl methcarylate having 1–3 carbon atoms in the alkyl group;

a polymer of an alkyl methacrylate having 1–4 carbon atoms in the alkyl group and containing at least 50 percent by weight of methyl methacrylate,

a polymer of an alkyl methacrylate and an alkyl acrylate having 1–12 carbon atoms in the alkyl groups and containing at least 70 percent by weight methyl methacrylate,

a graft copolymer of an alkyl methacrylate and an alkyl acrylate having 1–12 carbon atoms in the alkyl groups; the acrylic polymer has a number average molecular weight of about 20,000–70,000;

B. 5–40 percent by weight of cellulose ester having a viscosity of 0.1–12 seconds measured at 25°C. according to ASTM–D–1343, and a butyryl content of 30–60 percent by weight;

C. 5–35 percent by weight of an organic plasticizer;

wherein the film-forming constituents have a melt viscosity below 75,000 poises measured at 160°C. and the powder particles have a glass transition temperature of about 30°–60°C., and

wherein the colorant particles are selected from the group consisting of trans iron oxide red pigment, trans iron oxide yellow pigment, phthalocyanine pigments, indanthrone pigments, thioindigoid pigments, perylene pigments, carbazole dioxane pigments, isoindolinone pigments, flavanthrone pigments, anthanthrone pigments and mixtures thereof.

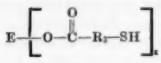
3,843,572
SOLID CURABLE POLYTHIOL COMPOSITIONS CONTAINING LIQUID POLYENES AND SOLID STYRENE-ALLYL ALCOHOL COPOLYMER BASED POLYTHIOLS

Charles R. Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 5, 1972, Ser. No. 250,553
Int. Cl. C08b *21/08*; **C08f** *29/12, 15/00*
U.S. Cl. 260—17 R **6 Claims**

1. A solid curable composition useful for obtaining a solid cross-linked polythioether consisting essentially of:

1. a liquid polyene containing at least 2 reactive unsaturated carbon to carbon bonds and having a molecular weight in the range of about 50 to 20,000; and
2. a solid polythiol containing at least 2 thiol groups per molecule of the general formula:

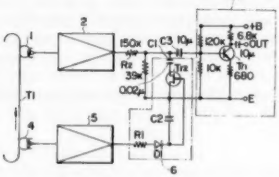


wherein x is an integer of at least 2; E is a styrene-allyl alcohol copolymeric moiety remaining after removal of x hydroxyl groups from a styrene-allyl alcohol copolymer to form x ester linkages; said styrene-allyl alcohol copolymer reactant having a hydroxy group content from about 1.8 to 10 percent by weight and a styrene content from about 30 to 94 percent by weight; and R_3 is a polyvalent organic radical member free of reactive carbon-to-carbon unsaturation and is selected from the group consisting of aryl, substituted aryl, aralkyl, substituted aralkyl, cycloalkyl, substituted cycloalkyl, alkyl and substtitued alkyl groups containing 1 to 16 carbon atoms and mixtures thereof; the total combined functionality of (1) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (2) the thiol groups per molecule in the polythiol being greater than 4.

3,843,573
NOISE REDUCTION DEVICE OF A TAPE RECORDER

Tomoaki Kosaka, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 24, 1972, Ser. No. 283,468
Claims priority, application Japan, Aug. 30, 1971, 46-78139
Int. Cl. G11b *5/44, 5/02, 27/30*
U.S. Cl. 360—25 **9 Claims**



1. A noise reduction device for a magnetic tape recorder, said device comprising:

a. first magnetic head means for reproducing a signal recorded on a tape;
b. amplifier means for amplifying said reproduced signal;
c. second magnetic head means for reproducing only a first portion of said signal recorded on the tape, wherein said portion lies in a predetermined frequency range and wherein said second magnetic head means is positioned to reproduce said signal prior to said first magnetic head means;
d. bypass circuit means coupled between said first magnetic head means and said amplifier means for controllably shunting to ground a second signal portion, above said predetermined frequency range, reproduced by said first magnetic head means in inverse proportion to the output level of said second magnetic head means; and
e. means coupling said second magnetic head means and said bypass circuit means for applying the output of said second magnetic head means to said bypass circuit means; wherein said bypass circuit means is controlled by the output level of said second magnetic head means such that said second reproduced signal portion is shunted only when the output level of said second magnetic head means is below a certain level, whereby noise signals reproduced by said first magnetic head means and above said predetermined frequency range are shunted in proportion to the output level of the second magnetic head means by said bypass circuit means and not applied to said amplifier means.

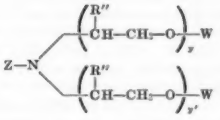
3,843,574
STRIPPABLE WAX COATING COMPOSITIONS

Dominic Apikos, 121 Elm St., Park Forest, Ill. 60466

Continuation of Ser. No. 226,340, Feb. 14, 1972, abandoned, which is a division of Ser. No. 2,383, Jan. 12, 1970, Pat. No. 3,660,334, which is a division of Ser. No. 556,555, June 10, 1966, Pat. No. 3,518,218. This application Aug. 15, 1973, Ser. No. 388,403
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AV **10 Claims**

1. A composition comprising in parts by weight:

A. 100 parts of wax;
B. from 10 to 300 parts of a polymeric composition consisting essentially of
   i. from 40–100 weight percent of an ethylenevinyl acetate copolymer wherein the vinyl acetate content ranges from 15–35 weight percent and,
   ii. from 0–60 weight percent of a compound which is a plasticizer for the ethylenevinyl acetate copolymer,
C. in an amount sufficient to impart strippability of a nitrogen containing compound having the following structural formula:



wherein W is a radical selected from the group consisting of hydrogen and an alkyl radical containing 1–6 carbon atoms, R'' is hydrogen or a methyl radical, Z is a radical having the structural formula:

wherein R is an aliphatic radical containing 10–30 carbon atoms, y is an integer having a value of from 1 to 30, y' is an integer having a value of from 0 to 30, provided that when R'' is hydrogen or methyl and y is 1, y' has a value of from 1 to 5. D. from 0 to 20 parts of hydrocarbon oil having a viscosity at 210°F. in excess of 25 SSU.

3,843,575

METHOD OF PRODUCING AN AQUEOUS EMULSION OF A PHENOL FORMALDEHYDE RESOL RESIN SUITABLE FOR IMPREGNATING FIBROUS MATERIAL

Rinse Dijkstra, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 680,357, Nov. 3, 1967, abandoned. This application Mar. 24, 1971, Ser. No. 127,785

Int. Cl. C08g 5/20

U.S. Cl. 260—29.3 3 Claims

1. In the method of producing an aqueous emulsion of a phenol formaldehyde resin, particularly adapted for the impregnation of fibrous material, by reacting phenol in water with an excess of formaldehyde in the presence of organic bases containing amino groups or ammonia, the improvement which comprises carrying out the reaction between the phenol and the formaldehyde in an aqueous medium in which the only bases present are organic nitrogen bases containing tertiary amino groups selected from the group consisting of trimethylamine, triethylamine, triisobutylamine, triethanolamine and diethylcyclohexylamine, organic nitrogen bases containing secondary amino groups of up to and including 6 carbon atoms and nitrogen bases selected from the group consisting of ammonia and organic nitrogen bases containing primary amino groups of up to and including 6 carbon atoms, the ratio of the number of tertiary amino groups to the number of the other amino groups and ammonia lies between 1:2.5 and 1:3.5, the pK of the nitrogen bases is 5 at 20°C and wherein said bases are soluble in the reaction mixture.

3,843,576

AQUEOUS COATING COMPOSITIONS OF ETHYLENE/ACRYLIC ACID COPOLYMER AND PHENOLIC RESIN

Robert E. Parkinson, Monroeville Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 290,599, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 139,197, April 30, 1971, abandoned. This application Dec. 28, 1973, Ser. No. 429,444

Int. Cl. C08g 51/24; C08f 45/24

U.S. Cl. 260—29.3 6 Claims

1. A composition useful as a coating or adhesive consisting essentially of an aqueous dispersion of:

a. from about 25 to about 95 weight percent of resin solids of a copolymer of ethylene and acrylic acid, wherein the acrylic acid constitutes about 18% to 24% of the copolymer; said copolymer being dissolved in aqueous ammonium hydroxide to form an ammonium salt or ionomer solution or dispersion;

b. from about 5 to about 75 weight percent of resin solids of a water dispersible, heat reactable, resol, A-stage type phenolic resin, essentially free of unreacted phenol and containing a substantial amount of trimethylolphenol.

3,843,577

SILOXANE-MODIFIED EPOXY RESIN COMPOSITIONS

Joseph W. Keil, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1972, Ser. No. 318,149

Int. Cl. C08g 45/16, 53/18

U.S. Cl. 260—29.1 SB 13 Claims

1. A homogeneous polymeric dispersion comprising

a. 55 to 95 weight percent of a curable epoxy resin composition, said epoxy resin having an average of more than one 1,2-epoxide group per molecule;

b. 4 to 35 weight percent of a fluid lubricant which is incompatible with the epoxy resin composition, said fluid having a viscosity in the range of 20 to 20,000,000 cs. at 25°C.;

c. 1 to 10 parts weight percent of a dispersing agent capable of maintaining (b) dispersed in (a), said dispersing agent being a siloxane copolymer selected from the group consisting of

1. copolymers consisting essentially of SiO_2 units, $(CH_3)_3SiO_{1/2}$ units and $Q(CH_3)_2SiO_{1/2}$ units in which Q is a polyoxypropylene polymer, a polyoxyethylene polymer, or a polyoxypropylene-polyoxyethylene copolymer radical having a molecular weight in the range of 500 to 6,000, Q being attached to the silicon atom via a silicon-carbon bond, the ratio of the SiO_2 units to the total $(CH_3)_3SiO_{1/2}$ and $Q(CH_3)_2SiO_{1/2}$ units being in the range of 1:0.4 to 1:1.2 and

2. copolymers which are reaction products derived from heating a mixture of a siloxane copolymer consisting essentially of SiO_2 units and $(CH_3)_3SiO_{1/2}$ units in which the ratio of SiO_2 units to $(CH_3)_3SiO_{1/2}$ units is in the range of 1:0.4 to 1:1.2, and a hydroxylated polyoxypropylene polymer, a hydroxylated polyoxyethylene polymer, or a hydroxylated polyoxypropylene-polyoxyethylene copolymer having a molecular weight in the range of 500 to 6,000.

3,843,578

SOLUTIONS OF N-VINYL PYRROLIDONE COPOLYMERS

Heino Logemann, Leverkusen; Carlhans Suling, Odenthal-Hahnenberg, and Gunter Lorenz, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 17, 1972, Ser. No. 281,298

Claims priority, application Germany, Aug. 17, 1971, 2141060

Int. Cl. C08f 19/00, 45/24

U.S. Cl. 260—29.6 AN 9 Claims

1. A process for the solution polymerization of a monomer mixture of from 10 to 99 percent by weight of N-vinyl pyrrolidone and from 1 to 90 percent by weight of methylacrylate and/or acrylonitrile which comprises polymerizing solutions containing from 5 to 50 percent by weight of said monomer mixture in a solvent which is a solvent for homopolymers of acrylonitrile or for copolymers of acrylonitrile with vinylidene chloride and/or vinyl chloride, at a temperature below 80°C. in the presence of a catalyst system comprising from 0.1 to 3 percent by weight, based on the quantity of monomers to be polymerized, of an organic peroxide selected from the group consisting of benzoyl peroxide, p-chloro benzoyl peroxide, peracetic acid, tert.-butyl hydroperoxide, cumene hydroperoxide, tert.-butyl perbenzoate, -peroctoate, -perpivalate, diisopropyl benzene hydroperoxide, menthene hydroperoxide, permaleic acid, acetyl cyclo hexyl sulfonyl peroxide and dicyclo hexyl percarbonate, and also from 0.1 to 3 mols, based on the peroxide, of an aromatic sulphinic acid selected from the group consisting of benzene and p-toluene sulphinic acid and the homologues and substitution products of benzene sulphinic acid.

3,843,579

WATER IN OIL FLUOROPOLYMER EMULSION CONTAINING HYDROCARBON OR HALOGENATED HYDROCARBON SOLVENT

Albert Robert Eanzel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1973, Ser. No. 328,383

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F 5 Claims

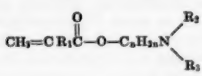
1. A composition consisting essentially of

from about 50 to 99.9 percent of an aliphatic hydrocarbon or halogenated hydrocarbon solvent,

from about 0.02 to 30 percent of water,

from about 0.01 to 15 percent of polyfluoroalkyl-containing stain repellent polymer, the polyfluoroalkyl having from 3 to 16 perfluorinated carbons and being a solid at ambient temperatures, and

from about 0.002 to 3 percent of a copolymer of 80 to 20 mol percent ethylene and 20 to 80 mol percent of an aminoalkyl acrylate of the formula



wherein

R_1 is hydrogen or methyl,

R_2 is hydrogen or alkyl of 1 to 4 carbons,

R_3 is hydrogen or alkyl of 1 to 4 carbons, and

n is a positive integer of from 1 through 4,

the copolymer having a melt index between 1 and 3,000 and being a solid at ambient temperatures the indicated percent being based on the weight of the composition.

3,843,580

ETHYLENE/VINYL CHLORIDE/N—METHYLOLACRYLAMIDE/N—(ALKOXYMETHYL) ACRYLAMIDE LATICES

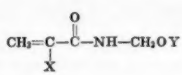
Harry M. Andersen, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 22, 1972, Ser. No. 255,373

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 TA **6 Claims**

1. An aqueous dispersion of an interpolymer consisting essentially of (A) 5 to 70 weight percent ethylene, (B) 30 to 95 weight percent vinyl chloride, (C) 2 to 6 weight percent N-methylolacrylamide and (D) 2 to 6 weight percent of a compound represented by the formula



wherein X represents CH_3 or H and Y represents an alkyl group from one to 10 carbon atoms.

3,843,581

REDUCING HEAT-SEAL TEMPERATURE REQUIREMENTS FOR COATINGS PREPARED FROM LATEXES OF VINYLIDENE CHLORIDE POLYMERS

Dale S. Gibbs, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 202,625, Nov. 26, 1971, abandoned. This application July 9, 1973, Ser. No. 377,479

Int. Cl. C08f *1/13*

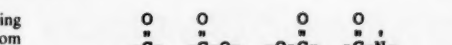
U.S. Cl. 260—29.6 TA **5 Claims**

1. A process for reducing the heat-seal temperature requirements of films and coatings produced from a polymer latex which latex consists essentially of water and a colloidally dispersed solid polymer prepared by the polymerization in aqueous dispersion of

1. at least about 80 percent by weight based on the total weight of monomers used of vinylidene chloride, and
2. from about 0.1 to about 5 percent based on the total weight of the monomers used of a significantly water-soluble ionic material selected from the group of sulfonic acids and their salts having the formala

$$R—Z—Q—SO_3^-—M+$$

wherein the radical R is selected from the group consisting of vinyl and alpha-substituted vinyl; the symbol Z represents a difunctional linking group of the structure



which will activate the double bond present in said vinyl group; —Q— is an alkylene and arylene divalent hydrocarbon having from one to about eight carbon atoms and having its valence bonds on different carbon atoms; the symbol M+ represents a cation selected from the group consisting of free acids, alkali metal salts, and ammonium, amine, sulfonium and quaternary ammonium salts, and

3. any remainder being one or more monoethylenically unsaturated comonomers selected from the group consisting of methacrylic acid, methyl methacrylate, hydroxyethylacrylate, hydroxypropylacrylate, hydroxyethylmethacrylate, acrylic acid, acrylonitrile, methacrylonitrile, acrylamide and the lower alkyl and dialkylacrylamides, acrolein, methylvinyl ketone and vinyl acetate, said process comprising: having present in said polymer latex prior to fusion of said latex into a film or coating from about 0.5 to about 5 percent by weight of latex polymer solids of a polyoxyethylene sorbitan fatty acid monoester containing from about 10 to 20 moles of ethylene oxide and wherein said fatty acid contains from about 12 to 18 carbon atoms.

3,843,582

REDUCING HEAT-SEAL TEMPERATURE REQUIREMENTS FOR COATINGS PREPARED FROM LATEXES OF VINYLIDENE CHLORIDE POLYMERS

Dale S. Gibbs, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 202,624, Nov. 26, 1971, abandoned. This application July 9, 1973, Ser. No. 377,481

Int. Cl. C08f *1/13*

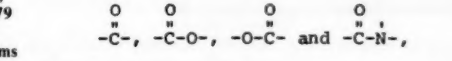
U.S. Cl. 260—29.6 TA **5 Claims**

1. A process for reducing the heat-seal temperature requirements of films and coatings produced from a polymer latex which latex consists essentially of water and a colloidally dispersed solid polymer prepared by the polymerization in aqueous dispersion of

1. at least about 80 percent by weight based on the total weight of monomers used of vinylidene chloride, and
2. from about 0.1 to about 5 percent based on the total weight of the monomers used of a significantly water-soluble ionic material selected from the group of sulfonic acids and their salts having the formula

$$R—Z—Q—SO_3^-—M+$$

wherein the radical R is selected from the group consisting of vinyl and alpha-substituted vinyl; the symbol Z represents a difunctional linking group of the structure



which will activate the double bond present in said vinyl group; —Q— is an alkylene and arylene divalent hydrocarbon having from one to about eight carbon atoms and having its valence bonds on different carbon atoms; the symbol M+ represents a cation selected from the group consisting of free acids, alkali metal salts, and ammonium, amine, sulfonium and quaternary ammonium salts, and

3. any remainder being one or more monoethylenically unsaturated comonomers selected from the group consisting of methacrylic acid, methyl methacrylate, hydroxyethylacrylate, hydroxypropylacrylate, hydroxyethylmethacrylate, acrylic acid, acrylonitrile, methacrylonitrile, acrylamide and the lower alkyl and dialkylacrylamides, acrolein, methylvinyl

ketone and vinyl acetate, said process comprising: having present in said polymer latex prior to fusion of said latex into a film or coating from about 0.5 to about 5 percent by weight of latex polymer solids of an adduct of an aliphatic alcohol or aliphatic acid and ethylene oxide, such adduct having the formula

$$R-Y-CH_2CH_2-O-_nZ$$

where R is alkyl having from four to about 18 carbon atoms, Y is

$$O \text{ or } \overset{O}{\overset{\|}{C}}-O,$$

n is an integer of from 4 to 25 and Z is hydrogen.

3,843,583

REDUCING HEAT-SEAL TEMPERATURE REQUIREMENTS FOR COATINGS PREPARED FROM LATEXES OF VINYLIDENE CHLORIDE POLYMERS

Dale S. Gibbs, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 202,624, Nov. 26, 1971, abandoned. This application July 9, 1973, Ser. No. 377,482

Int. Cl. C08 *1/13*

U.S. Cl. 260—29.6 TA 8 Claims

1. A process for reducing the heat-seal temperature requirements of films and coatings produced from a polymer latex which latex consists essentially of water and a colloidally dispersed solid polymer prepared by the polymerization in aqueous dispersion of

1. at least about 80 percent by weight based on the total weight of monomers used of vinylidene chloride, and
2. from about 0.1 to about 5 percent based on the total weight of the monomers used of a significantly water-soluble ionic material selected from the group of sulfonic acids and their salts having the formula

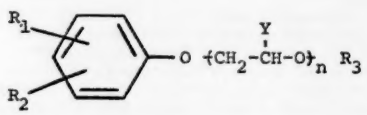
$$R-Z-Q-SO_3^-—M+$$

wherein the radical R is selected from the group consisting of vinyl and alpha-substituted vinyl; the symbol Z represents a difunctional linking group of the structure

$$\overset{O}{\overset{\|}{-C-}}, \quad -C-O-, \quad -O-C- \text{ and } \overset{O}{\overset{\|}{-C-}}N-,$$

which will activate the double bond present in said vinyl group; —Q— is an alkylene and arylene divalent hydrocarbon having from one to about eight carbon atoms and having its valence bonds on different carbon atoms; the symbol M+ represents a cation selected from the group consisting of free acids, alkali metal salts, and ammonium, amine, sulfonium and quaternary ammonium salts, and

3. any remainder being one or more monoethylenically unsaturated comonomers selected from the group consisting of methacrylic acid, methyl methacrylate, hydroxyethylacrylate, hydroxypropylacrylate, hydroxyethylmethacrylate, acrylic acid, acrylonitrile, methacrylonitrile, acrylamide and the lower alkyl and dialkylacrylamides, acrolein, methylvinyl ketone and vinyl acetate, said process comprising: having present in said polymer latex prior to fusion of said latex into a film or coating from about 0.5 to about 5 percent by weight of latex polymer solids of an alkyl phenol-olefin oxide adduct having the formula



wherein R_1 is hydrogen or alkyl and R_2 is alkyl wherein the sum of R_1 and R_2 equals from eight to 20 carbon atoms; where Y is hydrogen or methyl; where n is an integer from 6 to 40; and where R_3 is hydrogen or methyl.

3,843,584

PROCESS FOR THE PRODUCTION OF AQUEOUS POLYMER LATICES

Ulrich Turck, Marl, Germany, assignor to Chemische Werke Huls, Aktiengesellschaft, Germany

Filed Sept. 26, 1972, Ser. No. 292,461

Claims priority, application Germany, Oct. 6, 1971, 2149854

Int. Cl. C08d *1/09, 1/22*; C08f *19/10, 1/60*

U.S. Cl. 260—29.7 T 7 Claims

1. A process for the production of polymer latices in the aqueous phase comprising polymerizing a mixture of monomers in an aqueous solution at elevated temperatures, said monomer mixture consisting, by weight,

a. 40–65 percent of monomer selected fromthe group consisting of styrene, substituted styrene, and mixtures thereof,
b. 30–55 percent of a fumaric acid diester having 2–4 carbon atoms in the alcohol component,
c. 1–10 percent of a diene compound of 4–5 carbon atoms,
d. 0.3–4 percent of an ethylenically unsaturated acid having one to two carboxylic groups,

said aqueous solution comprising the following materials each based on 100 parts of monomer mixture,

e. 0.1–1.0 parts of an anionic emulsifier selected from the group consisting of (1) alkyl sulfates having 10–20 carbon atoms, alkyl sulfonates having 10–20 carbon atoms, and mixtures thereof, (2) alkylaryl sulfonates having 8–12 carbon atoms in the alkyl chain and mixtures thereof, (3) ammonium salts of α-sulfofatty acids having 10–20 carbon atoms and mixtures thereof, (4) alkali salts of α-sulfofatty acids having 10–20 carbon atoms, and mixtures thereof,
f. 0.2–2 parts of a nonionic emulsifier selected from the group consisting of a polyglycol ether produced by the reaction of 1 mol of fatty alcohols of 10–20 carbon atoms with 3–30 mol of ethylene oxide, a polyglycol ether produced by the reaction of 1 mol of alkyl phenols of 4–12 carbon atoms in the alkyl chain with 3–30 mol of ethylene oxide, and mixtures thereof,
g. 0.5–2 parts of a water soluble peroxydisulfate,

said polymer latices produced having a low viscosity with a high solids content, being stable to electrolytes, having a low coagulate content, and being substantially free of gels.

3,843,585

COACERVATION OF ANION-CONTAINING AQUEOUS DISPERSE SYSTEMS WITH AMPHOTERIC POLYELECTROLYTES

Donald A. Kangas, and W. Robert Neuendorf, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1972, Ser. No. 248,667
Int. Cl. C08d *5/02*; C08f *47/08*
U.S. Cl. 260—29.7 N 12 Claims

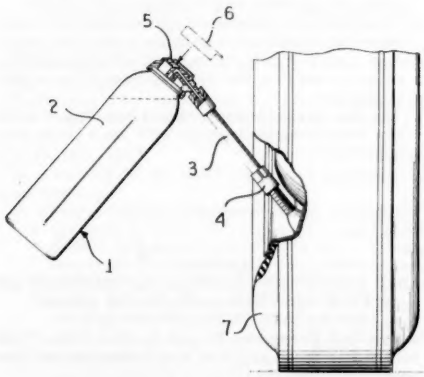
1. A composition comprising an aqueous disperse system of an anionizable material selected from the group consisting of anionically-stabilized latex of a water-insoluble acidic polymer, latex of water-insoluble polymer which is at least partially stabilized by anionic surfactant or mixture thereof with non-ionic surfactant, latex of water-insoluble polymer containing anionizable groups which is at least partially stabilized by non-ionic surfactant and an amount of an inherently water-dispersible amphoteric polyelectrolyte effective to irreversibly gel the system at a value of pH which is at or below the isoelectric point of the polyelectrolyte and at which value the anionizable material contains anions, said polyelectrolyte having an isoelectric point at pH of at least 6 and containing ionizable cationic groups having a pKa in the range from about 4 to about 11 and ionizable anionic groups having a pKa less than about 6, said polyelectrolyte having a molar ratio of ionizable cationic groups to ionizable anionic groups of at least 1:1.

3,843,586

PROCESS FOR PREPARING A FOAMABLE MATERIAL FOR SEALING RUBBER ARTICLES UPON PRESSURE REDUCTION THEREOF

Johannes Hendrik Leendert Wolf, Uithoorn, Netherlands, assignor to Aerochem N. V., Amsterdam, Netherlands

Filed Nov. 4, 1969, Ser. No. 873,959
Int. Cl. C08d *13/10*, *13/24*
U.S. Cl. 260—29.7 R 5 Claims



1. A hermetically sealed aerosol package containing a composition which will foam upon the pressure reduction obtained by the discharge of said composition from said package and constituted to seal hollow gas-permeable rubber articles, comprising an aqueous emulsion of polyisoprene and a liquified gas propellant, said emulsion including at least one emulsifying agent selected from the group consisting of cationic, nonionic, amphoteric, and anionic emulsifiers, said emulsifying agent having an HLB-value of from 4 to 10 and in its final composition being non-cationic.

3,843,587

POLYAMIDE-IMIDE RESINS PREPARED FROM THE REACTION OF AROMATIC DIISOCYANATES WITH MIXTURES OF POLYCARBOXYLIC ACIDS AND ANHYDRIDES

John T. Keating, and John L. Simonian, both of Schenectady, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed May 16, 1969, Ser. No. 825,267
Int. Cl. C08g *20/32*
U.S. Cl. 260—30.2 8 Claims

1. A polyamide-imide resin consisting essentially of the reaction product of (1) an aromatic diisocyanate in an amount of 0.95 to 1.01 moles, (2) an aromatic dicarboxylic acid selected from the group consisting of terephthalic acid, isophthalic acid, and benzophenone dicarboxylic acid in an amount of 0.05 to 0.40 moles, (3) an aromatic dianhydride selected from the group consisting of pyromellitic dianhydride, benzophenone dianhydride, naphthalene 2, 3, 6, 7 dianhydride, naphthalene 1, 2, 5, 6 dianhydride, diphenyl 2, 3, 2′, 3′-dianhydride, the dianhydride of 2,2-bis (3′, 4′-dicarboxyphenyl) propane, the dianhydride of bis (3,4-dicarboxyphenyl) sulfone and perylene 3, 4, 9, ,10-dianhydride in an amount of 0.01 to 0.30 moles, and (4) trimellitic anhydride in an amount of 0.5 to 0.80 moles, the total of (2), (3) and (4) adding up to 1 mole.

3,843,588

COATING AND COATED PRODUCTS

Tsu Huai Wang, Hockessin, Del., assignor to Wilmington Chemical Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 72,818, Sept. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 602,545, Dec. 19, 1966, Pat. No. 3,582,423. This application Dec. 20, 1972, Ser. No. 316,921
Int. Cl. C08k *1/40*
U.S. Cl. 260—32.6 N 6 Claims

1. A tough elastomeric condensate of linear hydrophobic polymer blocks having a molecular weight from about 700 to about 5000, each end of these blocks terminating in an alcohol group, the blocks being first reacted with an organic diisocyanate and then condensed with p,p′-methylene dianiline, the molar ratio of the isocyanate group to the hydroxyl groups being from about 1.1:1 to about 2:1, the p,p′-methylene dianiline being in an amount about 2 to 6 percent in excess of that required for each amine group to react with an isocyanate group, and the condensate having a molecular weight between about 40,000 and about 200,000.

3,843,589

STABLE PUMPABLE SLURRIES OF ETHYLENE OXIDE POLYMERS

Lloyd Henry Wartman, Westport, Colo., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,308
Int. Cl. C08f *45/34*; F17d *1/16*
U.S. Cl. 260—33.4 R 12 Claims

1. A stable slurry formulation which comprises:

a. particulate water-soluble ethylene oxide polymer which has an average molecular weight greater than about 500,000 and a density of about1.15 to about 1.26;

b. an inert liquid vehicle which is a non-solvent for said ethylene oxide polymer, said vehicle being a mixture of at least two mutually soluble liquids, or a solution of a solid in a liquid,

one component of said mixture having a density lower than that of the ethylene oxide polymer and being selected from the group consisting of propylene glycol, 1,3-

butylene glycol, 1.6-hexylene glycol, ethylene glycol, 2-methyl-pentane-2.4-diol, dipropylene glycol, butane diol, poly(ethylene oxides) of molecular weight of about 200 to about 600, and water-soluble liquid poly(alkylene oxides) about 200 to about 20,000 molecular weight

and the other component of said mixture having a density higher than that of the ethylene oxide polymer and being selected from the group consisting of glycerine, 1, 2, 3, 4, 5, 6 hexane hexol, 1, 2, 3, 4 butane tetrol, pentaerythritol and ethylene carbonate

characterized in that the density of the liquid vehicle is from about 96.5 percent to about 103.5 percent of the density of said ethylene oxide polymer, said vehicle being present at a total volume per unit volume of polymer powder which exceeds the void volume of said ethylene oxide polymer by at least 3 percent but by less than 500 percent preferably by at least 45 percent but by not more than 350 percent, and

c. a thickening agent which is non-reactive with said ethylene oxide polymer and said liquid vehicle and which is employed in an amount of about 0 percent to about 3 ½ based on the weight of the slurry formulation.

3,843,590

PRESSURE SENSITIVE ADHESIVE

Rudolf Hombach, Cologne-Flittard, and Dieter Theisen, Remscheid, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 243,415, April 12, 1972, Pat. No. 3,763,067. This application Apr. 2, 1973, Ser. No. 346,930

Claims priority, application Germany, Apr. 14, 1971, 2118020

Int. Cl. C09j *3/26*

U.S. Cl. 260—33.6 A **11 Claims**

1. An adhesive composition comprising at least one polyalkenamer, dissolved in an inert organic solvent and 10 to 250 percent by weight, based on the polyalkenamer, of a phenol-formaldehyde resin.

3,843,591

REINFORCED POLYAMIDE COMPOSITIONS

Ross M. Hedrick, Creve Coeur, and William R. Richard, Jr., St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 260,000, June 5, 1972, , which is a continuation of Ser. No. 888,047, Dec. 24, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 806,331, Dec. 30, 1968, abandoned, and Ser. No. 806,332, Dec. 30, 1968, abandoned, and Ser. No. 806,333, Dec. 30, 1968, abandoned, each is a continuation-in-part of Ser. No. 560,247, June 24, 1966, Pat. No. 3,419,517, which is a continuation-in-part of Ser. No. 284,375, May 3, 1963, abandoned. This application Apr. 12, 1973, Ser. No. 350,578The portion of the term of this patent subsequent to Dec. 31, 1985, has been disclaimed.

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **36 Claims**

1. A reinforced polyamide composition comprising:

a. a polyamide matrix formed by the condensation polymerization of a polycarboxylic acid and a polyamide having an intrinsic viscosity of at least about 1.0 and a maximum M_w/M_n value of about 2.5,

b. from about 2 to about 55 percent by volume of the total composition of a particulate crystalline inorganic filler material having a Moh's hardness of at least about 4 and particle size such that about 100 percent of the particles have a particle size of about 40 microns or less and at least about 95 percent by weight of the particles have a particle size of about 15 microns or less, said filler material having been treated with an organosilane coupling agent of the formula:

$$X_a—Si(R_n—Z)_c \\ \quad\quad | \\ \quad\quad Y_b$$

where X is a hydrolyzable group capable of reaction with a hydroxyl group, Y is a hydrogen or a monovalent hydrocarbon group, Z is a primary or secondary amino, primary or secondary amido or epoxy group, R is a divalent hydrocarbon group having from 1 to about 20 carbon atoms, a is equal to 1 or more, c is equal to 1 or more, n is 0 or 1, and the sum of $a + b + c$ is equal to 4.

3,843,592

FIRE RESISTANT POLYCHLOROPRENE ADHESIVE

Garry R. Perkins, Palatine, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 197,949, Nov. 11, 1971,. This application May 7, 1973, Ser. No. 358,201

Int. Cl. C08g *51/04*

U.S. Cl. 260—38 **9 Claims**

1. A process for preparing a fire resistant adhesive composition comprising on a weight percent basis: from 20 to 80 percent polychloroprene; from 15 to 50 percent heat advancing, oil soluble phenolic resin of which at least 20 percent is a resin which is thermally stable at 500°F. and above; from 1 to 50 percent asbestos; from 2 to 20 percent of an oxide selected from the group consisting of magnesium and cadmium oxide; from 0 to 50 percent fillers; and from 0.1 to 2 percent each of a dialkyl thiodipropionate and a nickel dibutyl dithiocarbamate antioxidant, said process comprising:

A. Forming a mixture of the phenolic resin and a portion of the magnesium or cadmium oxide in an organic solvent, admixing the same until dispersion is complete, and permitting the admixture to pre-react;

B. blending the polychloroprene elastomer with the remainder of the magnesium or cadmium oxides, the antioxidants, zinc oxide and asbestos fiber in a high shear mixing apparatus and then dissolving the blend in an organic solvent; and

C. blending the compositions obtained from Steps A and B at a temperature below about 140°F. for a period of at least 8 hours.

3,843,593

RADAR ABSORPTIVE COATING COMPOSITION OF AN ACRYLIC POLYMER, A POLYESTER AND AN ISOCYANATE CROSS-LINKING AGENT

Theodore Shell, Swarthmore, Pa., and Joseph A. Vasta, Woodbury, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 5, 1972, Ser. No. 259,677

Int. Cl. C08g *51/04*

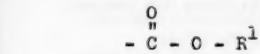
U.S. Cl. 260—40 R **6 Claims**

1. A coating composition comprising 10–70 percent weight of a film-forming binder in an organic solvent; wherein the film-forming binder consists essentially of

1. a resin blend of 50–85 percent by weight of a graft copolymer having a backbone of polymerized monomers selected from the group consisting of polymerized monomers of an aromatic hydrocarbon having vinylene groups, an alkyl acrylate, an alkyl methacrylate, acrylonitrile,

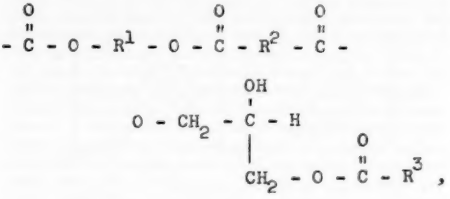
methacrylonitrile and mixtures thereof wherein the alkyl groups have 1-8 carbon atoms and having ester groups attached directly to its backbone, said ester groups comprising about 10 to 75 percent of the total weight of the polymer and consisting essentially of

Ester Group (A)



and

Ester Group (B) selected from the group consisting of



2. a polyisocyanate wherein the molar ratio of isocyanate to hydroxyl of the resin blend is about 1:1 to about 1:1.25; and

the coating composition contains about 50–90 percent by weight, based on the weight of the film-forming binder, of uniformly dispersed carbonyl iron pigment having a particle size of 0.5 – 15 microns.

3,843,594

THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE-FUNCTIONAL PREPOLYMERS AND DIPHENOL-EXPOXY RESIN ADDUCTS AND MOLDING THEREOF

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 209,342, Dec. 17, 1974, abandoned. This application Feb. 15, 1974, Ser. No. 443,181

Int. Cl. C08f *45/10*

U.S. Cl. 260—42.18 **22 Claims**

1. A molding powder which comprises a particulate, intimate mixture of:

A. an epoxy-functional copolymer of acrylic monomers

1. consisting of about 15 to about 40 weight percent glycidyl methacrylate, about 10 to about 30 weight percent methacrylonitrile, and a remainder consisting essentially of methyl methacrylate, and
2. having an average molecular weight in the range of about 1,500 to about 16,000, with less than 5 percent of the molecules of said copolymer having a molecular weight below 1,000, a softening point above 25°C, and epoxide groups in its molecular structure resultant of inclusion of said glycidyl methacrylate as a constituent monomer thereof, and

B. a hydroxy-terminated adduct or adduct-blend formed by heating together a mixture which on a catalyst-free basis consists essentially of

1. a diphenol having molecular weight in the range of about 110 to about 500 and
2. an epoxy resin that converts from a solid to a liquid at a temperature below about 140°C, has at least two epoxy groups per molecule, and has molecular weight in the range of about 200 to about 3,000

at a temperataure at least 20°C above the melting point of said epoxy resin until at least about 10 percent of said epoxy resin is reacted with said diphenol,

the components of said molding powder being employed in such relative proportions that the ratio of free phenolic hydroxyl groups to free epoxy groups in said molding powder is about 0.8 to about 1.2.

3,843,595

ULTRAVIOLET LIGHT STABILIZER COMBINATIONS FOR POLYMERS

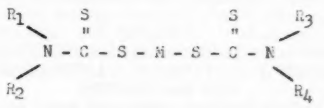
Ronald D. Mathis, Taylors, and James S. Dix, Greenville, both of S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 6, 1972, Ser. No. 286,697

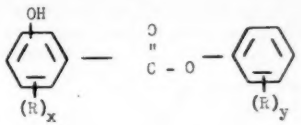
Int. Cl. C08f *45/58*

U.S. Cl. 260—45.75 N **18 Claims**

1. A composition of matter useful as a stabilizer for polymers which comprises a mixture of at least one nickel dithiocarbamate represented by the formula



wherein M represents nickel, each R_1, R_2, R_3, and R_4 group independently represents an acyclic hydrocarbon radical having up to 20 carbon atoms or a cyclic hydrocarbon radical having up to 20 carbon atoms; and at least one hydroxy-substituted phenyl benzoate represented by the formula



wherein each R group independently represents halogen, an acyclic hydrocarbyl or hydrocarbyloxy radical having up to 20 carbon atoms or a cyclic hydrocaryl or hydrocarbyloxy radical having up to 20 carbon atoms, x is an integer having a value of from 0 to 4, and y is an integer having a value of from 0 to 4, the ratio by weight of said at least one nickel dithiocarbamate to said at least one phenyl benzoate being within the range of from about 10:1 to about 1:10.

3,843,596

STABILIZED PHOSPHONITRILE ELASTOMERS

Gary Stephen Kyker, Uniontown; Joseph Alfred Beckman, Akron; Adel Farhan Halasa, Bath, and James Edward Hall, Barberton, all of Ohio, assignors to Firestone Tire & Rubber Company, Akron, Ohio

Filed May 10, 1973, Ser. No. 359,034

Int. Cl. C08g *51/56, 51/62*

U.S. Cl. 260—45.75 R **7 Claims**

1. A thermally stabilized composition comprising polyphosphazenes the skeletal chains of which consist of recurring units represented by the general formula:

in which each R and R′ is a group which renders the skeletal

units resistant to hydrolysis and which is selected from the group consisting of alkoxy, substituted alkoxy, aryloxy, substituted aryloxy and amino in which not every R and R′ is the same as every other R and R′, and *n* is an integer greater than 3 and less than about 50,000; and a stabilizer selected from the group consisting of

1 between 0.01 and 5.0 mole percent based on the polyphosphazene of at least one dialkyl—, alkylaryl—, or diaryldithiocarbamates of a metal selected from the group consisting of zinc, bismuth and lead, and 2. between 0.01 and 3 mole percent based on the polyphosphazene of at least one basic inorganic compound of a metal selected from the group consisting of alkali metals and alkaline earth metals including Mg.

3,843,597

NICKEL CYCLOHEXYLAMINE COMPLEXES OF 2,2-THIOBIS (P-ALKYLPHENOL), LIGHT STABILIZERS FOR POLYOLEFINS

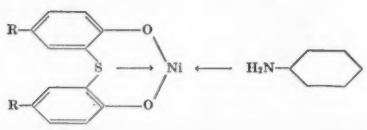
Joseph Anthony Stretanski, Clinton, and Joseph Adrian Hoffman, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 240,764, April 3, 1972,. This application Oct. 23, 1973, Ser. No. 408,357

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 N **5 Claims**

1. A polymeric composition of matter stabilized against deterioration by ultraviolet radiation comprising a polymer of a mono-olefin and from 0.1 to 5 percent of a complex having the formula



wherein R is alkyl of 1-18 carbons.

3,843,598

FIRE RETARDANT POLYMERS CONTAINING HALOGENATED N-PHENYL BENZAMIDES

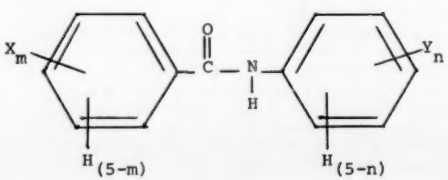
Leonard J. Stach, Riverside, and Raymond W. Ingwalson, Arlington Heights, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 420,994

Int. Cl. C08f *45/62;* **C08g** *51/62*

U.S. Cl. 260—45.75 R **8 Claims**

1. A fire retardant polymeric composition comprising a combustible polymer and a fire retarding amount of the compound



wherein X and Y are each selected from the group consisting of chlorine and bromine and *m* and *n* are each integers from 1 to 5.

3,843,599

RUBBERS STABILIZED WITH POLYPHENYLENE ETHERS AND PROCESS THEREOF

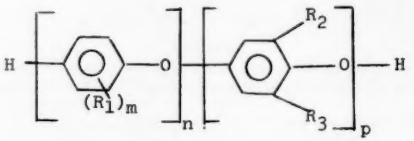
Gordon D. Brindell, Crystal Lake, and Rudolph F. Macander, Cary, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed May 15, 1972, Ser. No. 253,288

Int. Cl. C08f *45/58;* **C08g** *51/58*

U.S. Cl. 260—45.85 S **15 Claims**

1. An elastomeric rubber selected from natural rubber and unsaturated hydrocarbon polymer synthetic rubber stabilized with a polyphenylene ether having the following structural formula:



wherein R_1 is hydrogen, primary alkyl, or secondary alkyl; R_2 and R_3 are primary alkyl, secondary alkyl, primary aralkyl, or secondary aralkyl; m is an integer between 1 and 2 inclusive; and the sum of $n + p$ is an integer between 2 and 50 inclusive with the further condition that p is never 0, said polyphenylene ether being present in an amount between 0.01 and 10 percent based on the weight of the rubber.

3,843,600

STABILIZATION OF OLEFIN POLYMERS

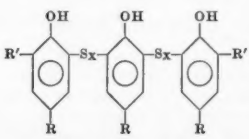
Michael Robin, Colonia, N.J., and Sheldon R. Schulte, Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 8, 1972, Ser. No. 251,170

Int. Cl. C08f *45/50;* **C08g** *51/58*

U.S. Cl. 260—45.95 C **12 Claims**

1. A polymer composition of increased stability against oxidative degradation comprising a polymer of an α mono-olefin of 2–4 carbon atoms and an effective stabilizing amount of compound of the general formula:



wherein *x* is an integer of from 1 to 2, R′ is tertiary butyl and each R individually is an alkyl radical of 1–4 carbon atoms, provided that at least one R is CH_3.

3,843,601

HYDRAULIC ELASTOMER

Leonard Bretz Bruner, Manchester, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 11, 1973, Ser. No. 405,349

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **21 Claims**

1. A silicone fluid curable to a hydraulic elastomer, having a viscosity of from 1000 to 1,000,000 centipoises, comprising

a copolymer of dimethylsiloxane units with 0.1 to 0.9 mole percent of methylvinylsiloxane units, the mole percent of methylvinyl-siloxane units having a value of (4.8/log V) - C, where V is the viscosity in centipoises and C is a number having a value of from 0.53 to 0.83, said copolymer having end groups selected from the class consisting of trimethylsiloxy, hydroxy and alkoxy.

3,843,602

SOLUBLE AMIDE-IMIDE POLYMERS TERMINATED WITH OLEFIN GROUPS

Daniel Kruh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,731
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **10 Claims**

1. The reaction product of (1) the reaction product of excess diamine containing at least two carbon atoms with an acidic material selected from (a) trimellitic anhydride, (b) trimellitic anhydride with up to 20 mole percent substituted by aromatic dianhydride, and (c) trimellitic anhydride with up to 100 percent by weight of material selected from dicarboxylic acid and aliphatic dianhydride and (2) olefinic dienophile material having amine reactivity selected from (a) Diels-Alder adducts of dienes with maleic anhydride, (b) acetylene dicarboxylic esters, (c) acetylene dicarboxylic acrylates, (d) maleic anhydride, (e) halogen-, lower alkyl- and aromatic-substituted maleic anhydride, (f) citraconic anhydride, (g) tetrahydrophthalic anhydride, (h) itaconic anhydride, (i) alkenyl-substituted succinic anhydride, (j) cis-endo-5-norbornene-2,3-dicarboxylic anhydride, and (k) alkyl and halogenated derivatives of cis-endo-5-norbornene-2,3-dicarboxylic anhydride.

3,843,603

LIGHT-SENSITIVE POLYMERIC ESTERS CONTAINING AZIDO SUBSTITUTED STYRYL GROUPS

Allen Peter Gates, Knaresborough, England, assignor to Howson-Algraphy Limited, London, England

Filed Oct. 19, 1972, Ser. No. 299,118
Claims priority, application Great Britain, Oct. 22, 1971, 49297/71
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **14 Claims**

1. A light sensitive polymeric ester comprising groups of the general formula

$$N_3 - R - (CR_1{=}CR_2)_a - (CR_3{=}CR_4)_b - COO -$$

attached to carbon atoms of a polyhydric polymeric material wherein a and b are zero or 1 and $a + b$ is at least 1; R represents an aromatic radical optionally substituted with a group or groups additional to the azido group; and R_1, R_2, R_3 and R_4, which may be the same or different, represent halogen atoms, hydrogen atoms, cyano groups, alkyl groups, aryl groups, alkoxy groups, aryloxy groups, aralkyl groups or aralkoxy groups provided that at least one of the groups R_1 to R_4 represents a halogen atom or a cyano group.

3,843,604

METHOD OF PRODUCING POLYPHENYLENEOXIDES-1,4 IN ALIPHATIC NITRILE SOLVENTS

Andrei Nikodimovich Pravednikov, 3 Parkovaya ulitsa, 50, korpus 2, kv. 32; Valery Vladimirovich Kopylov, Platovsky proezd, 5, kv. 56, and Vladimir Mikhailovich Cherednichenko, Prospekt Mira, 122, kv. 282, all of Moscow, U.S.S.R.

Continuation of Ser. No. 20,411, March 17, 1970, abandoned. This application July 5, 1973, Ser. No. 376,902
Int. Cl. C08g *23/18*
U.S. Cl. 260—47 ET **3 Claims**

1. In a method of producing polyphenyleneoxides-1,4, comprising oxidizing a single-ring aromatic monooxy-compound with oxygen in an organic solvent in the presence of a cupramine complex catalyst formed from a copper salt and an amine, an improvement according to which the organic solvent is a nitrile of an aliphatic monocarboxylic acid or of an aliphatic polybasic carboxylic acid wherein all the carboxylic groups are substituted by nitrile groups.

3,843,605

3-(TRIHYDROCA RBYLPHOSPHORANYLIDENE)-2,5-PYRROLIDINEDIONES AS LATENT CATALYSTS FOR PROMOTING THE REACTION BETWEEN PHENOLS AND EPOXY RESINS

Dennis L. Schmidt, Lake Jackson, Tex., and George A. Doorakian, Waltham, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 290,889, Sept. 21, 1972, abandoned. This application Nov. 28, 1973, Ser. No. 419,737
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **14 Claims**

1. A precatalyzed epoxy resin composition comprising (a) an epoxy resin bearing an average of more than one vicinal epoxy group per molecule and (b) a small but catalytic amount of a 3-(trihydrocarbylphosphoranylidene)-2,5-pyrrolidinedione.

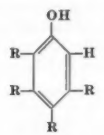
3,843,606

PREPARATION OF ORTHO-ALKYLATED PHENOLS

Bernardus J. Van Sorge, Selkirk, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 1, 1969, Ser. No. 846,925
Int. Cl. C07c *37/12*
U.S. Cl. 260—621 R **7 Claims**

1. In a process for alkylating a phenol in the ortho position which comprises the vapor phase reaction in the presence of an alkylation catalyst of an alkyl alcohol and a phenol having the general formula:



where R is a monovalent substituent selected from the group consisting of hydrogen, alkyl, phenyl and alkyl substituted phenyl; the improvement comprising performing the reaction in the presence of a porous catalyst that is a magnesium oxide powder bonded with from 1–15 percent by weight of an inert organic cellulosic polymeric binder.

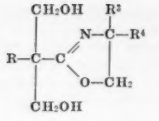
3,843,607

BAKING ENAMEL VEHICLE COMPRISING REACTION PRODUCT OF UREA, FORMALDEHYDE AND AN OXAZOLINE

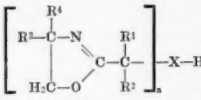
Jerry H. Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Continuation-in-part of Ser. No. 185,406, Sept. 30, 1971, abandoned, which is a division of Ser. No. 36,680, May 12, 1970, Pat. No. 3,654,229. This application May 21, 1973, Ser. No. 362,594
Int. Cl. C08g *9/10, 9/24*
U.S. Cl. 260—70 R **14 Claims**

1. A resinous compound consisting of the condensation product of (a) an oxazoline compound corresponding to the formula



wherein R is a saturated or unsaturated hydrocarbon radical of from 1 to 20 carbon atoms or (b) an oxazoline corresponding to the formula



wherein X is any divalent, or trivalent saturated or unsaturated aliphatic hydrocarbon group of from 1 to 32 carbon atoms; R^1 and R^2 are hydroxymethyl; R^3 and R^4 are methyl, ethyl, hydroxymethyl or the group $R^5CH_2COOCH_2$— wherein R^5 is a saturated or unsaturated aliphatic hydrocarbon radical of from 1 to 20 carbon atoms; when X is divalent, *a* is 2 and *b* is 1, and when X is trivalent, *a* is 3 and *b* is 0, with (1) formaldehyde and urea, or (2) alkylated urea-formaldehyde resin, or (3) mixtures of alkylated urea-formaldehyde resin and 2,2-dimethylolpropionic acid.

3,843,608

PREPARING POLYAMIDES BY ANIONIC POLYMERIZATION OF LACTAMS

Zbynek Bukac, and Jan Sebenda, both of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie ved., Prague, Czechoslovakia

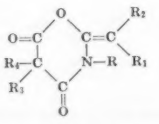
Filed July 26, 1972, Ser. No. 275,155

Claims priority, application Czechoslovakia, July 27, 1971, 5478-71; July 27, 1971, 5481-71

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **9 Claims**

1. The method of preparing solid polyamides by anionic polymerization of cyclic lactams containing at least 4 atoms in a ring in the presence of cocatalysts of the formula:



wherein R_1, R_2, R_3 and R_4 can be C_{1-18} alkyl, C_{1-18} alkenyl or aryl lower alkyl, R=R_1, aryl, dilower alkylaminoaryl or lower alkoxyaryl.

3,843,609

TEREPHTHALAMIDE POLY BIS(PROPOXY)ALKYLENE

Isao Kimura; Masao Matsui; Hiroshi Takahashi, and Shizume Takemoto, all of Osaka, Japan, assignors to Kanebo Ltd., Tokyo, Japan

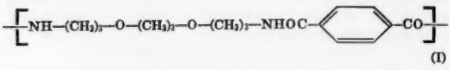
Continuation-in-part of Ser. No. 65,641, Aug. 20, 1970, Pat. No. 3,729,449. This application Oct. 16, 1972, Ser. No. 297,971

Claims priority, application Japan, Aug. 27, 1969, 44-67744; Dec. 4, 1969, 44-97690; Apr. 13, 1970, 45-31387; Apr. 21, 1970, 45-34025; Apr. 23, 1970, 45-35046; May 26, 1970, 45-45418

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **6 Claims**

1. A polyamide having an improved modulus and antistatic property, which consists essentially of a fiber-forming homopolymer of poly-bis(propoxy)alkylene terephthalamide consisting essentially of the recurring structural unit shown by the following formula I



(I)

3,843,610

POLYMERIZATION PROCESS

David Bowen, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 9, 1968, Ser. No. 766,192

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **11 Claims**

1. A polymerization process comprising:

a. introducing polymerizable material having a viscosity less than 400 poises and finely divided pigment into a polymerization vessel, said pigment tending to form agglomerates under polymerizing conditions;

b. maintaining polymerizing conditions in said vessel; and

c. while polymerization is proceeding and before the viscosity of said material exceeds 400 poises:

1. pre-filtering at least a portion of said material through a pre-filter having a given rating for removal of agglomerates larger than said rating, and

2. continuing polymerization of said filtered portion.

3,843,611

COPOLYAMIDE FROM TEREPHTHALIC ACID, DODECANEDIOIC ACID AND DODECANE DIAMINE

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 22, 1972, Ser. No. 255,868

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **8 Claims**

1. A copolyamide suitable for use as a molding resin and consisting essentially of the polymeric condensation product of terephthalic acid, dodecanedioic acid, and 1,12-dodecanediamine, the terephthalic acid constituting from about 50 to about 90 mole percent of the acids, said copolyamide having a tensile strength of at least 7,000 psi when measured in accordance with ASTM D 638–68.

3,843,612

MOLDABLE AND/OR THERMOFORMABLE ACRYLIC POLYMERS AND PROCESSES FOR THE PRODUCTION THEREOF

Martin Vogel, Jenkintown, and Marvin J. Hurwitz, Elkins Park, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 56,690, July 20, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,645

Int. Cl. C08f *15/02*

U.S. Cl. 260—78.5 R **7 Claims**

1. A process for producing a formed article which comprises

first reacting, at a temperature of about 20° to 80°C., a mixture of

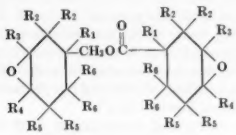
a. a monomeric material containing

1. 40 to 98 weight percent of a (C_1—C_4) alkyl methacrylate, cyclohexyl methacrylate, styrene, vinyltoluene or a mixture thereof,

2. 2 to 60 weight percent of one or more α,β-monoethylenically unsaturated carboxylic acid, and

3. optionally up to 5 weight percent of another monoethylenically unsaturated monomer having a group of the formula

b. a diepoxide of the formula



wherein R_1 represents a hydrogen atom, a halogen atom or a lower alkyl radical containing between 1 and 4 carbon atoms, R_2, R_3, R_4, R_5, and R_6 represent a hydrogen atom or a lower alkyl radical containing between a 1 and 4 carbon atoms, in an amount to provide about 0.1 to 1.2 epoxy groups per carboxylic acid group in (a) (2) above,

c. a free radical initiator, and

d. a catalyst for the acid-epoxide condensation to effect polymerization of the monomers and condensation of acid copolymer and diepoxide (b),

so as to form a moldable and/or thermoformable viscous or solid polymeric product having a viscosity of from about 10,000 poises to solid at normal room temperature, thereafter heating to a temperature of at least 140°C. and prolonging the heating of the resulting formed article until it is fully cured.

3,843,613

BRANCHED-CHAIN HYDROCARBON ELASTOMERS

John B. Campbell, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 38,862, May 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 625,598, March 24, 1967, abandoned. This application Apr. 17, 1972, Ser. No. 244,866

Int. Cl. C08f *15/40*

U.S. Cl. 260—78.5 BB **4 Claims**

1. A sulfur curable chain saturated branched elastomer comprising a copolymer of

a. from 25 to 75 percent by weight of ethylene units,

b. units derived from a C_{20}–C_{62} di-ester of 2-(hydroxyalkyl or alkenyl)-5-norbornene, said di-ester units being present in an amount resulting from the addition to the reaction mixture from which said copolymer is formed of about from 0.01–0.10 gram mole per kilogram of copolymer formed of said C_{20}–C_{62} di-ester, the amount of di-ester not exceeding 15 percent by weight of the copolymer,

c. sufficient units of a nonconjugated diolefin containing only one polymerizable double bond selected from the group consisting of (1) an aliphatic diolefin, and (2) a cycloaliphatic compound having a one- or two-carbon bridged ring structure to provide 0.1 to 4.0 gram moles/kilogram of carbon-carbon double bonds derived from the diolefin, and

d. the remainder of said copolymer being propylene units.

3,843,614

AROMATIC POLYSULFIDE POLYMER

George A. Doorakian, Waltham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 22, 1973, Ser. No. 390,452

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **7 Claims**

1. A process for making an aromatic polysulfide polymer which comprises reacting an aromatic compound of the group consisting of an aromatic disulfonic acid, an aromatic disulfinic acid, a thio analog thereof, and a compound hydrolyzable thereto with at least two moles of an alkali metal polysulfide and hydrogenating the reaction mixture in the presence of a sulfactive hydrogenation catalyst and in a polar solvent reaction medium at about 100°–300°C. under superatmospheric pressure.

3,843,615

THERMOPLASTIC POLYESTER MOLDING COMPOSITIONS

Walter Herwig, Neuenhain, Taunus; Rudolf Kern, Mainz, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed May 15, 1972, Ser. No. 253,196

Claims priority, application Germany, May 17, 1971, 2124336

Int. Cl. C08g *39/02*

U.S. Cl. 260—860 **10 Claims**

1. A thermoplastic polyester molding composition consisting of a physical mixture of

a. a linear saturated polyester of one or more aromatic dicarboxylic acids which may contain up to 10 percent by weight, based on the total weight of dicarboxylic acids, of aliphatic dicarboxylic acids, with saturated aliphatic or cycloaliphatic diols, and

b. 0.05 to 2 percent by weight, based on the weight of the linear saturated polyester (a), of a cross-linked saturated polyester of (1) terephthalic acid or an ester-forming derivative thereof, (2) a diol having from 2 to 10 carbon atoms and (3) 0.01 to 3 percent by weight, based on the weight of the cross-linked saturated polyester, of an organic cross-linking polyfunctional compound having at least three functional groups, all of said functional groups being selected from hydroxyl and carboxyl groups.

3,843,616

VINYL CHLORIDE-ETHYLENE COPOLYMERS AND THE PREPARATION THEREOF

Dean E. Richardson, La Marque, Tex., and Gordon G. Harkreader, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 546,405, April 29, 1966, abandoned. This application Feb. 25, 1970, Ser. No. 13,957

Int. Cl. C08f *1/11, 15/02*

U.S. Cl. 260—87.5 C **3 Claims**

1. A porous vinyl chloride-ethylene copolymer resin containing at least 98.3 percent by weight of vinyl chloride and 0.3 to 1.7 percent by weight of ethylene polymerized therein characterized by having a sorption value greater than about 50 parts of dioctyl phthalate plasticizer per hundred parts of resin when measured in accordance with ASTM D-1755-60T; an inherent viscosity of about 0.5 to 1.7, when measured as a 0.2 gram sample in 100 ml. of cyclohexanone at 25°C.; a dryblend time of about 2.0 to 15.0 minutes as measured with a Brabender Plasticorder and a bulk density of about 20 to 40 lbs./cubic foot, said copolymer resin having been prepared by a polymerization process which comprises:

a. a continuous, one-stage polymerization of liquid vinyl chloride and gaseous ethylene monomers in an aqueous suspension containing per hundred parts by weight of vinyl chloride:

1. from about 0.05 to 1.0 parts of a protective colloid,
2. from about 0.02 to 1.0 parts of a free radical vinyl polymerization initiator,
3. from about 150 to 400 parts of water,
4. sufficient ethylene to afford an autogenous pressure of about 100 to 400 psig. at temperature of about 35° to 80°C. for at least 4 hours, and

b. recovering the vinyl chloride ethylene copolymer from the suspension system.

3,843,617
METHOD OF SURFACE MODIFICATION OF POLYMER MATERIALS

Vladimir Alexandrovich Orlov, Smolenskaya ulitsa, 10, kv. 101; Vera Dmitrievna Zaitseva, Novo-Gireevskaya, 4, kv. 109; Viktor Alexeevich Sinitsyn, ulitsa Festivalnaya, 24, kv. 100, and Ekaterina Efimovna Rostovtseva, Mosfilmovskaya ulitsa, 18, kv. 18, all of Moscow, U.S.S.R.

Division of Ser. No. 55,289, July 15, 1970, abandoned. This application Sept. 21, 1972, Ser. No. 291,074

Int. Cl. C08f *7/04*

U.S. Cl. 260—93.5 A **1 Claim**

1. A method of surface modification of solid polystyrene, to thereby improve substantially the surface adhesion properties thereof, comprising treating said polystyrene with an aqueous solution comprising:
   1. water,
   2. a mineral acid,
   3. a mineral oxidant selected from the group consisting of potassium dichromate, potassium bromate, potassium permanganate and sodium perchlorate, and
   4. the sodium, potassium, or zinc salt of hydrochloric, hydrobromic, or hydtoiodic acid, said (1), (2), (3) and (4) being in a weight ratio of 50–1000:0.3–7:0.1–7:1–15, respectively.

3,843,618
PROCESS FOR PRODUCING BUTADIENE POLYMER

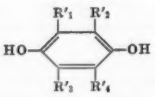
Yoshiharu Yagi, Toyonaka; Hiroshi Sato, Takatsuki; Shizuo Narisawa; Seimei Yasui, both of Ibaragi; Akira Kobayashi, Nishinomiya; Minoru Hino, and Kazuhiko Hata, both of Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed Dec. 27, 1971, Ser. No. 212,696

Int. Cl. C08d *1/14*

U.S. Cl. 260—94.3 **12 Claims**

1. A process for producing butadiene polymer which comprises polymerizing 1,3-butadiene in the presence of a catalyst system comprising:
   A. at least one nickel compound selected from the group consisting of the halides, sulfates, organic acid salts, complex compounds, organic coordination compounds and chelate compounds thereof,
   F. a dialkylaluminum monofluoride compound, and
   D. a hydroguinone compound having the formula:



   where R_1', R_2', R_3' and R_4' are each a hydrogen atom or a halogen atom, or the combination of R_1' with R_2' and/or of R_3' with R_4' is an aromatic condensed ring(s) and the remaining substituents, if any, are each a hydrogen atom or a halogen atom, in the presence or absence of
   G. water together with or without at least one alcohol, carboxylic acid or phenol

to give a butadiene polymer containing predominantly a cis-1,4-structure and having a regulated molecular weight.

3,843,619
PROCESS FOR POLYMERIZING OLEFINS

Benedetto Calcagno, Milan, and Paolo Colombo, Saronno, both of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 864,539, Oct. 7, 1969, abandoned. This application Aug. 10, 1972, Ser. No. 279,404

Claims priority, application Italy, Oct. 12, 1968, 845194/68

Int. Cl. C08f *1/56*

U.S. Cl. 260—94.9 C **3 Claims**

1. In a process for the polymerization of ethylene comprising polymerizing ethylene at a temperature of from −10° to 80°C. at a pressure of from 1 to 40 atmospheres in the presence of a solvent selected from the group consisting of paraffin hydrocarbons, aromatic hydrocarbons, halogenated paraffin hydrocarbons and halogenated aromatic hydrocarbons, said solvent being liquid under the conditions of polymerization, and in the presence of a catalyst containing an organometallic compound and a compound of a transition metal, the improvement comprising conducting the polymerization using a catalyst consisting essentially of:
   a. an organic compound containing in its molecule at least one ethylenically alpha-unsaturated keto group, said organic compound being indigo;
   b. ethyl aluminum sesquichloride; and
   c. vanadium oxychloride, the molar ratio between said vanadium oxychloride and said indigo plus said ethyl aluminum sesquichloride being 1/78.7, and the molar ratio between said ethyl aluminum sesquichloride and said indigo being 2.1/1.

3,843,620
PROCESS FOR THE PRODUCTION OF POLYETHYLENE POWDER HAVING A HIGH DENSITY AND HIGH TAP DENSITY

Gottfried Piekarski, and Anton Hundmeyer, both of Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany

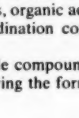
Filed May 16, 1972, Ser. No. 253,893

Claims priority, application Germany, May 26, 1971, 2126249

Int. Cl. C08f *1/44, 3/06*

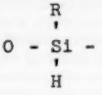
U.S. Cl. 260—94.9 C **13 Claims**

1. A catalyst for the production of polyethylene powder of high density and high tap density consisting essentially of the reaction product of (a) about one part by volume of a hydrogenpolysiloxane with structural units having the formula



where R is a member selected from the group consisting of alkyl having 1 to 6 carbom atoms, cycloalkyl having 5 to 6 carbon atoms and phenyl, with the terminal silicons satisfied with R, hydrogen or, at most, one hydroxyl and having a viscosity of from 5 to 100 cSt (25°C), (b) about 0.5 to 2.0 parts by volume of a compound selected from the group consisting of titanium tetrachloride, titanium trichloride in mixture with titanium tetrachloride and the addition complex $AlTi_3Cl_{12}$, and (c) about 0 to 0.2 parts by volume of a compound selected from the group consisting of aluminum chloride and aluminum bromide, treated, in the presence of from 0 to 2 parts by volume of a saturated hydrocarbon having 5 to 9 carbon atoms, with oxygen at a temperature of from −40°C to +60°C for a time sufficient that from 5 percent to 50 percent of the titanium ions present in a lower valence are oxi-

dized to their highest valence, and (d) further activated by the addition of from 0 to 30 percent by weight, based on said oxidized catalyst, of monomeric and/or polymeric organic compounds of silicon and/or tin selected from the group consisting of monomeric silanes with at least one hydrogen atom bonded to silicon, tetraalkyl tin, tetramethyldisiloxane, tin tributylhydride and hydrogenpolysiloxane with structural units having the formula



wherein R is a member selected from the group consisting of alkyl having 1 to 6 carbon atoms and phenyl, and having a viscosity of from 2 to 50,000 cSt (25°C), to the oxidized catalyst.

3,843,621

PROCESS FOR PREPARING LEUCYL-LEUCYL-VALYL-HENYLALANYL METHYL ESTER

Robert G. Strachan, North Plainfield, N.J., assignor to Merck & CO. Inc., Rahway, N.J.

Filed Aug. 19, 1971, Ser. No. 173,278

Int. Cl. C07c *103/52*; **C07g** *7/00*

U.S. Cl. 260—112.5 **2 Claims**

1. The process of preparing the methyl ester of leucyl-leucyl-valyl-phenylalanine and hydrohalide salts thereof, which comprises sequentially reacting (1) phenylalanine with the N-carboxyanhydride of valine to form valyl-phenylalanine; (2) valyl-phenylalanine with the N-carboxyanhydride of leucine to form leucyl-valyl-phenylalanine; (3) the latter tripeptide with the N-carboxyanhydride of leucine to form leucyl-leucyl-valyl-phenylalanine, each of which sequential reactions is conducted without isolation of intermediate di- and tripeptides (a) by bringing the reactants together in aqueous buffered solution, with vigorous agitation, while maintaining the pH at 10.2 and the temperature at 0°C, and (b) by then adjusting the pH of the reaction mixture to about 2.5–3.0 thereby decomposing carbamate to form the free amino grouping; and reacting said leucyl-leucyl-valyl-phenylalanine with methanol in the presence of thionyl halide to form the methyl ester of leucyl-leucyl-valyl-phenylalanine hydrohalide.

3,843,622

BASIC MONAZO COMPOUNDS CONTAINING A QUATERNATED HYDRAZIDE GROUP

Visvanathan Ramanathan, Basel, and Hans Wilhelm Liechti, Oberwil/bl, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

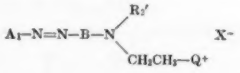
Continuation-in-part of Ser. No. 17,317, March 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 648,204, June 23, 1967, abandoned. This application Feb. 10, 1972, Ser. No. 225,274

Claims priority, application Switzerland, June 24, 1966, 9189/66

Int. Cl. C09f *29/06*

U.S. Cl. 260—149 **6 Claims**

1. A water-soluble basic monoazo dyestuff of the formula



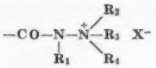
in which

A_1 is phenyl or phenyl substituted by lower alkyl, trifluoromethyl, lower alkoxy, chlorine, bromine, cyano, nitro, lower alkoxycarbonyl, lower alkylcarbonyl, lower alkylsulfonyl, acylamino and sulfonomide,

B is para-phenylene or para-phenylene substituted chlorine, bromine, lower alkyl, trifluoromethyl, lower alkoxy, acylamino or amino,

R_2' is lower alkyl, cyanoloweralkyl, loweralkoxy-loweralkyl, lower alkanoyloxy-lower alkyl, lower alkylsulphonyloxy-lower alkyl, aroyloxy-lower alkyl, arylsulphonyloxy-lower alkyl, arylloweralkyl or a residue of the formula $-CH_2CH_2-Q^+ X^-$,

Q is a quaternated hydrazide group of the formula



where

R_1 is lower alkyl or hydrogen,

R_2, R_3 and R_4 each independently is lower alkyl or R_2 and R_3 are lower alkyl and

R_4 is phenyl or benzyl, and

X is an anion

and where

"acylamino" means lower alkanoylamino, aroylamino, lower alkyl sulfonylamino, arylsulfonylamino, lower alkoxycarbonylamino, ureido and lower alkylureido;

"sulfonamide" means an unsubstituted sulfonic acid amide group or a sulfonic acid amide group substituted by lower alkyl, aryl-loweralkyl or aryl, and

"aryl" means unsubstituted phenyl or phenyl substituted by lower alkyl, lower alkoxy, chlorine or bromine and

"lower" means containing up to 4 carbon atoms.

3,843,623

2-HYDROXY-5-LOWER ALKYL-4'[4-LOWER ALKOXY-6-SULPHO OR SULPHATO-HYDROCARBYLAMINO-1:3:5-TRIAZINE-2-LAMINO]-AZOBENZENE

Edgar Siegel, Leverkusen-Steinbuchel, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

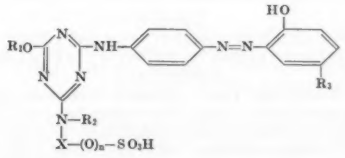
Filed Jan. 18, 1972, Ser. No. 218,832

Claims priority, application Germany, Jan. 18, 1971, 2102174

Int. Cl. C09b *43/16*

U.S. Cl. 260—153 **8 Claims**

1. Monoazo dyestuff, which in the form of the free acid, corresponds to the formula



in which

R_1 represents alkyl with 1 to 4 carbon atoms or alkyl with 1 to 4 carbon atoms substituted by hydroxyl, methoxy, ethoxy, chloro or bromo;

R_2 represents hydrogen or alkyl with 1 to 4 carbon atoms;

R_3 represents alkyl with 1 to 4 carbon atoms;

X represents alkylene with 1 to 4 carbon atoms and

n denotes 0 or 1.

3,843,624
MONO OR DISAZO DYESTUFFS CONTAINING A DIAMINO, HALOTRIAZINYL OR PYRIMIDINYL SUBSTITUENT

Herbert Seiler, Riehen, and Paul Dussy, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

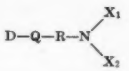
Filed Feb. 3, 1970, Ser. No. 8,422

Claims priority, application Switzerland, Feb. 26, 1969, 2862/69; July 7, 1969, 10311/69

Int. Cl. C09b *62/08, 62/24;* **D06p** *1/38*

U.S. Cl. 260—153 **9 Claims**

1. A reactive dyestuff, containing no acid, saltforming, water-solubilizing groups, of the formula



wherein

D represents the radical of a monazo or disazo dyestuff, unsubstituted or substituted only by halogen, cyano, nitro, lower alkyl, lower alkenyl, perfluoro(lower)alkyl, hydroxy-(lower)alkyl, cyanoethyl, β, β-dicyanovinyl, lower alkoxy, phenoxy, methylphenoxy, lower alkylthio, phenylthio, lower alkanoyl, lower alkylsulphonyl, phenylsulfonyloxy, dimethylamino, amino, N-(β-cyanoethyl)-ethylamino, diethylamino, methylethylamino, ethylbenzylamino, ethylbutylamino, N-(β-hydroxyethyl)-ethylamino, β-hydroxyethylamino, di(β-hydroxyethyl)amino, N-(β-cyanoethyl)-β-hydroxyethylamino, di(β-cyanoethyl)amino, anilino, oxyanilino, methylamino, dimethylanilino, methylanilino, lower alkanoylamide, lower alkoxycarbonylamide, benzoylamide, lower alkylsulphonylamide, N-loweralkyl- and N,N-diloweralkyl-lower alkylsulphonylamide, hydroxy or phenyl,

represents a bridging member $-NX_3-$, $-O-$, $-S-$ or $-NX_3CO-$, whereby X_3 represents hydrogen or lower alkyl, represents diazinyl or triazinyl containing only chlorine, bromine or fluorine substituents, each of which can be split off as anion and which is bound to a ring carbon atom adjacent to a tertiary nitrogen atom,

X_1 & X_2 represent the same or different alkyl or alkoxyalkyl wherein X_1 and X_2 must together contain from 8 to 36 carbon atoms,

or

X_1 represents cyclohexyl or cyclohexyl substituted by lower alkyl, and

X_2 represents alkyl of 1 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms substituted by a member selected from the group consisting of hydroxyl, lower alkoxy, lower alkenyloxy and cyano, lower alkenyl, cyclohexyl or cyclohexyl substituted by lower alkyl.

3,843,625
PYRAZOLE AZO DYESTUFFS CONTAINING A SULFONYLUREA OR SULFONYLURETHANE SUBSTITUENT

Nalin Binduprasad Desai; Onnusami Jayaraman, both of Goregaon-Bombay, India; Visvanathan Ramanthan, Basel; Klaus Artz, Muttenz, both of Switzerland; Navnitrai Nagarji Naik, Goregaon-Bombay, India, and Walter Jenny, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

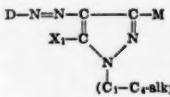
Continuation-in-part of Ser. No. 806,291, March 11, 1969, Pat. No. 3,679,657. This application Dec. 15, 1971, Ser. No. 208,464

Claims priority, application Switzerland, Mar. 18, 1968, 3958/68

Int. Cl. C09b *29/36, 29/38;* **D06p** *3/52*

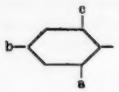
U.S. Cl. 260—163 **2 Claims**

1. A dyestuff which is free from sulfonic acid groups and which has the formula:



$(C_1-C_4\text{-alkylene or phenylene})-X-CO-NR-SO_2-R_2$

wherein M is hydrogen, alkyl of one to three carbon atoms, phenyl, —CO—O(alkyl, of one to four carbon atoms or phenyl), $CONH_2$ or $CONH_2$ alkylated with one to four carbon atoms, R is hydrogen, methyl, ethyl, or phenyl; X is —O— or $-NR_1-$ wherein R_1 is hydrogen or alkyl of one to four carbon atoms; X_1 is NH_2 or OH; R_2 is aryl of six to 10 carbon atoms and D is of the formula



wherein a is hydrogen, chlorine, cyano, carbo-lower-alkoxy, or sulfonyl-lower-alkyl; b is nitro, sulphamoyl, di-lower-alkylcarbamoyl, carbo-lower-alkoxy, or carbobenzyloxy; and c is hydrogen, cyano, chlorine, bromine, or nitro.

3,843,626
ANTI-INFLAMMATORY COMPOSITIONS CONTAINING ACYLATED-B-D-GLUCOPYRANOSIDES AND METHODS OF USING THEM

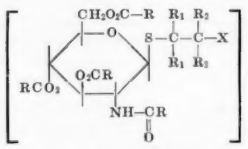
Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

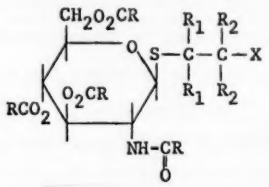
Division of Ser. No. 789,000, Dec. 31, 1968, Pat. No. 3,723,617. This application Nov. 13, 1972, Ser. No. 306,962

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **4 Claims**

1. A compound having the structural formula:





wherein:

X is bromo, chloro, $-CO_2R$, acylamido of from two to five carbons, or acylthio of from two to five carbons;

R is alkyl of from one to five carbons or phenyl; and

R_1 and R_2 are hydrogen, alkyl of from one to five carbons, or acylamido of from two to five carbons.

3,843,627

PROCESS FOR THE ISOLATION OF CONVALLATOXIN ACETONIDE

Johannes Hermann Hartenstein, Wittental, and Gerhard Satzinger, Denzlingen, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 26, 1972, Ser. No. 266,188
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **5 Claims**

1. A process for the isolation of convallatoxin acetonide from a crude extract of convallaria which consists essentially of

A. concentrating the crude extract;

B. reacting, in the presence of p-toluene-sulfonic acid-monohydrate catalyst, the convallatoxin present in the concentrated extract with acetone to form said convallatoxin acetonide, and

C. separating the acetonide by crystallization and subsequent filtration from the rest of the extract mixture.

3,843,628

CARDIOTONIC GLYCOSIDES

Hitoshi Minato, Toyonaka, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 833,784, June 16, 1969, abandoned. This application May 11, 1971, Ser. No. 142,347
Claims priority, application Japan, June 18, 1968, 43-42160; July 26, 1968, 43-53256
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **7 Claims**

1. 17β-(3-furyl)-5β,14β-androstane-3β,14,16β-triol-3-tridigitoxoside and its 3‴,4‴-cyclic carbonate, pharmaceutically acceptable carboxylic acylates containing 1 to 18 carbon atoms, and pharmaceutically acceptable 3‴,4‴-acetals in which the acetal carbonyl moiety contains 1 to 7 carbon atoms.

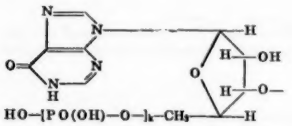
3,843,629

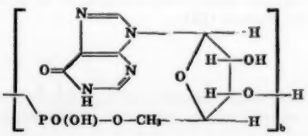
COMPLEXS OF POLYRIBOINOSINIC ACID AND POLYRIBO-2-THIOCYTIDYLIC ACID

Karl-Heinz Scheit; Peter Faerber; Karl Reuss, and Otto Saiko, all of Darmstadt, Germany, assignors to Merk Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

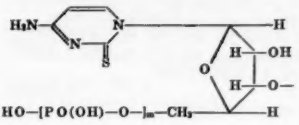
Filed June 16, 1972, Ser. No. 263,677
Claims priority, application Germany, June 19, 1971, 2130544; Apr. 14, 1972, 2218057
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 R **11 Claims**

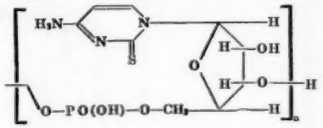
1. A two-component complex of a polyriboinosinic acid of the formula





wherein k is an integer from 1 to 3, inclusive; and b is an integer from 1 to 2,000, inclusive; and of a polyribo-2-thiocytidylic acid of the formula





wherein m is an integer from 1 to 3, inclusive; and n is an integer from 1 to 2,000, inclusive; and the physiologically acceptable metal and ammonium salts thereof.

3,843,630

PRODUCTION OF ε-CAPROLACTAM

Isamu Fujita, Ikeda; Kiyoshi Otoi, Suita, and Tooru Yoneya, Toyonaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Feb. 1, 1973, Ser. No. 328,653
Claims priority, application Japan, Feb. 15, 1972, 47-15750
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **10 Claims**

1. A process for producing ε-caprolactam which comprises bringing N-acetyl-ε-caprolactam into contact in the gaseous phase with

a. an acid catalyst selected from the group consisting of

i. silica-alumina catalysts wherein the SiO_2: Al_2O_3 ratio is 10:90 to 99:1 based on weight

ii. zeolite catalysts which contain at least one cation selected from the group consisting of hydrogen, calcium, magnesium, zinc, silver, palladium, cadmium, copper, molybdenum, tungsten, cerium, lanthanum and neodymium

iii. silica-magnesia catalysts wherein the SiO_2:MgO ratio is 0:5:1 to 5:1 based on weight

iv. silica-zirconia catalysts wherein the SiO_2:ZrO_2 ratio is 9:1 to 0.2:1 based on weight.

v. alumina-boria catalysts wherein the Al_2O_3: B_2O_3 ratio is 99:1 to 40:60 based on weight

vi. alumina catalysts containing fluorine wherein the Al_2O_3:F ratio is 99.95:0.05 to 70:30 based on weight and

vii. phosphoric acid catalysts supported by a carrier wherein the ratio of carrier:phosphoric acid is 1:0.1 to 1:10 based on weight

or

b. a basic catalyst selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, barium hydroxide, sodium carbonate and potassium carbonate, supported on a carrier in the presence of steam wherein the molar ratio of N-acetyl-ε-caprolactam to steam is 1:0.5 to 1:50; the reaction temperature being 150° to 450°C, said contact being conducted at a pressure of 0.1 to 1,000 mm Hg.

3,843,631

18-NOR-14-BETA-PREGNANO-(13,14-F)-HEXAHYDRO-,4-OXAZEPIN-3-ONES

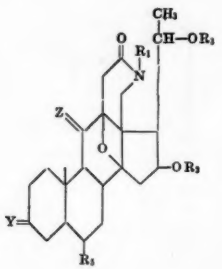
Ulrich Kerb, 8, Waitzstrasse; Rudolf Wiechert, 38, Endestrasse; Ulrich Eder, 30, Billerbecker Weg, and Hans-Detlef Berndt, 10 a, Waldsangerpfad, all of Berlin, Germany

Continuation-in-part of Ser. No. 236,172, March 20, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 334,971

Int. Cl. C07d *87/54*

U.S. Cl. 260—239.3 P **13 Claims**

1. A compound of the formula



wherein Y is an oxygen atom or H, OR′ where R′ is hydrogen, C_{1-11} carboxylic acid acyl, lower alkyl, phenyl lower alkyl, lower alkoxy lower alkyl or tetrahydropyranyl, R_3 is hydrogen, hydroxy or C_{1-11} carboxylic acid acyloxy and Z is an oxygen atom; H,H or H,OR″ where R″ is hydrogen or C_{1-11} carboxylic acid acyl; and R_1 is hydrogen, lower alkyl, lower alkenyl and lower alkynyl R_2 and R_3 are hydrogen or C_{1-11} carboxylic acid acyl where C_{1-11} carboxylic acid acyl as used above in all occurrences is selected from the group consisting of unsubstituted alkanoic acids, substituted alkanoic acids wherein the substituent is halogen, hydroxy amino, cyclopentyl, cyclohexyl or phenyl, unsubstituted alkanoic dicarboxylic acids and benzoic acid.

3,843,632

OPTICAL BRIGHTENING AGENTS OF OXAZOLYL DERIVATIVES

Masatoshi Matsuo, Ibaragi; Tadao Sakaguchi, Osaka, and Takashi Akamatsu, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

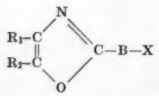
Filed Oct. 12, 1970, Ser. No. 80,187

Claims priority, application Japan, Oct. 21, 1969, 44-83990; Oct. 30, 1969, 44-87461; Oct. 30, 1969, 44-87462; Dec. 27, 1969, 44-186770; Dec. 27, 1969, 44-1869; Dec. 27, 1969, 44-1870; Dec. 27, 1969, 44-1871; Dec. 27, 1969, 44-1872

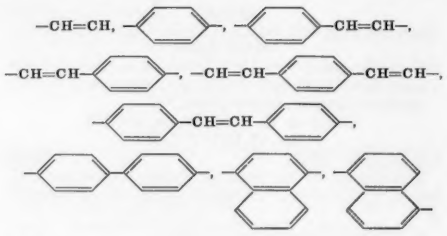
Int. Cl. C07d *85/44*; **C09b** *23/100*

U.S. Cl. 260—240 CA **4 Claims**

1. An oxazolyl derivative of the formula,

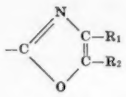


wherein B represents a member selected from the group consisting of



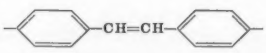
and

each of R_1 and R_2 represents a hydrogen atom, a C_1–C_6 alkyl, cyclopentyl, cyclohexyl, or a phenyl group which may be substituted by C_1–C_6 alkyl or C_1–C_6 alkoxy groups or halogen atoms, or R_1 and R_2 may be linked to each other to form cyclopentyl or cyclohexyl group together with two carbon atoms to which R_1 and R_2 are bonded, and may be the same or different; and X represents an oxazolyl group of the formula (II),



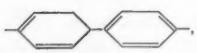
(II)

wherein R_1 and R_2 are the same as identified above provided that when B represents either

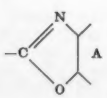


or

each of R_1 and R_2 represents a cyclopentyl, cyclohexyl, or R_1 and R_2 may be linked to each other to form a cyclopentyl or a cyclohexyl group together with the two carbon atoms to which R_1 and R_2 are bonded, and provided that when B is

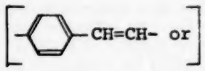


that R_1 and R_2 are not both phenyl or are not together phenyl and hydrogen and when B is —CH=CH—, R_1 and R_2 are not together phenyl and hydrogen, or an aryloxazolyl group of the formula (III),



(III)

wherein A represents benzene or napthalene nucleus which may be substituted by C_1–C_6 alkyl groups or halogen atoms, or when the bivalent group represented by B is

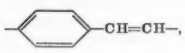


X represents an oxazolyl group of the formula (II), an aryloxazolyl group of the formula (III), or an aryl group of the formula (IV),

(IV)

wherein R_3 represents hydrogen or a halogen atom, C_1–C_6 alkoxy, cyano, hydroxycarbonyl, C_1–C_6 alkoxycarbonyl, a phenoxycarbonyl, a group of the formula,

or —$NHOR_6$ wherein each of R_4 and R_5 represents a hydrogen atom or C_1–C_6 alkyl group and R_6 represents a C_1–C_6 alkyl or a phenyl group or when the bivalent group represented by B is



X represents an oxazolyl group of the formula (II), an aryloxazolyl group of the formula (III), or an aryl group of the formula (IV),

(IV)

wherein R_3 represents cyano, hydroxycarbonyl, C_1–C_6 alkoxycarbonyl, a phenoxycarbonyl, a group of the formula,

or —$NHOR_6$ wherein each of R_4 and R_5 represents a hydrogen atom or C_1–C_6 alkyl group and R_6 represents a C_1–C_6 alkyl or a phenyl group.

3,843,633

DIVINYL-DIPHENYL COMPOUNDS

Kurt Weber, and Hans Schlapfer, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

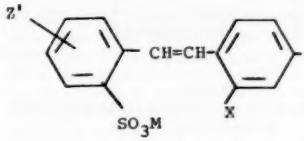
Filed Dec. 18, 1972, Ser. No. 316,156

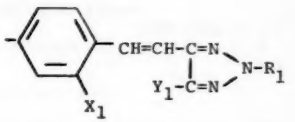
Claims priority, application Switzerland, Dec. 30, 1971, 19171/71

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 C **6 Claims**

1. A compound of formula





where

Z' is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkenyloxy of 3 or 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, benzyloxy or —SO_3M,

M is a hydrogen, alkali metal, alkaline earth metal, ammonium or amine

X and X_1 each independently are hydrogen, halogen, alkyl of 1 to 4 carbon atoms alkoxy of 1 to 4 carbon atoms or —SO_3M

Y_1 is hydrogen, chlorine, bromine, alkyl of 1 to 6 carbon atoms or an aryl group selected from phenyl, naphthyl and diphenylyl, said aryl group being unsubstituted or substituted by —SO_3M, halogen, alkyl of 1 to 4 carbon atoms alkenyloxy of 3 or 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or benzyloxy

R_1 is phenyl that is unsubstituted or substituted by —SO_3M, halogen, alkyl of 1 to 4 carbon atoms, alkenyloxy of 3 or 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or benzyloxy,

and where said compound contains no more than 4 -SO_3M groups.

3,843,634

BENZIMIDAZOLINONE DERIVATIVES

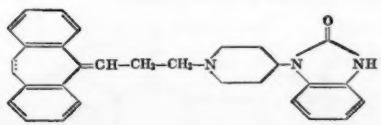
Willem Soudijn, Turnhout; Ineke Van Wijngaarden, Beerse, and Paul Adriaan Jan Janssen, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutical N.V., Beerse, Belgium

Filed Feb. 20, 1973, Ser. No. 333,858

Int. Cl. C07d *49/38*

U.S. Cl. 260—240 TC **3 Claims**

1. A benzimidazolinone derivative having the formula:



wherein the dotted line represents an optional double bond.

3,843,635
[(THIOXANTHENYL) PROPYL]-TRIAZASPIRO[4,5]DECAN-4-ONES

Willem Soudijn, Turnhout; Ineke Van Wijngaarden, Beerse, and Paul Adrian Jan Janssen, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Filed Feb. 26, 1973, Ser. No. 335,846
Int. Cl. C07d *29/26*
U.S. Cl. 260—240 TC **3 Claims**

1. A chemical compound selected from the group consisting of 1-phenyl-8-[3-(9-thioxanthenyl)propyl]-1,3,8-triazaspiro[4,5]decan-4-one; 1-phenyl-8-[3-(thioxanthen-9-ylidene)propyl]-1,3,8-triazaspiro[4,5]-decan-4-one; and the therapeutically active acid addition salts thereof.

3,843,636
1-(5-(P-METHOXYPHENYL)FURFURYLIDENE)AMINO) HYDANTOIN

Ralph L. White, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,466
Int. Cl. C09b *23/00*
U.S. Cl. 260—240 G **1 Claim**

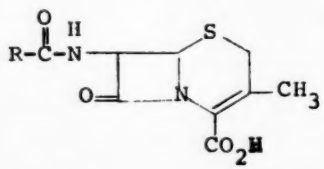
1. 1- [5-(p-Methoxyphenyl)furfurylidene]amino hydantoin.

3,843,637
PROCESS FOR REARRANGING 6-ACYLAMIDOPENICILLANIC ACID-1-OXIDES TO 7-ACYLA MIDO-3-METHYL-CEPH-3-EM-4-CARBOXYLIC ACIDS

Joseph Rubinfeld, Northport, Long Island, N.Y.; Raymond Urgel Lemiuex, and Rintje Raap, both of Edmonton, Alberta, Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed May 11, 1971, Ser. No. 143,683
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **1 Claim**

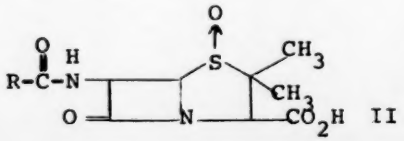
1. The process for the preparation of a compound having the formula



I

in which R is hexyl, thiophene-2-methyl, phenylmethyl, phenyl, phenoxymethyl, phenylmercaptomethyl, said phenyl group having the formula

in which R^2 is H, Cl, CH_3, CH_3O or NO_2; which process compri heating a compound having the formula



II

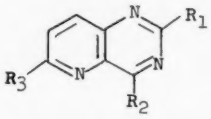
in which R is as defined as above, in a weakly basic organic solvent selected from the group comprised of dioxane, tetrahydrofuran, ethyl methyl ketone, isobutyl ketone, methyl n-propyl ketone, n-propylacetate, n-butyl acetate, isobutyl acetate, sec-butyl acetate, diethyl carbonate and diethylene glycol dimethyl ether, at a temperature range in the range of about 50° C. to about the reflux temperature of the solvent system, for a period of time of up to about 48 hours, said time partially determined by the temperature at which the process is conducted, in the presence of a catalytic amount of pyridine-di-(phosphoric acid) complex, said complex being present in a molar ratio of about 0.05 to 0.5 moles per mole of compound II.

3,843,638
2,4-DIAMINO-SUBSTITUTED PYRIDO(3,2-D)PYRIMIDINES AND SALTS THEREOF

Josef Nicki; Erich Muller; Berthold Barr, and Josef Roch, all of Biberach, Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Filed Apr. 6, 1972, Ser. No. 241,791
Claims priority, application Germany, Apr. 10, 1971, 2117657; Feb. 23, 1972, 2208534; Feb. 23, 1972, 2208535
Int. Cl. C07d *57/20*
U.S. Cl. 260—243 R **8 Claims**

1. A compound of the formula



wherein R_1 and R_2 are each morpholino, thiomorpholino, 1-oxido-thiomorpholino, 1,1-dioxido-thiomorpholino or piperidino, where each of these may optionally have a methyl substitutent attached thereto; piperazino; N′-formyl -piperazino; N′-acetyl-piperazino; N′-carbethoxy-piperazino; N′-benzoyl-piperazino; N′-methane-sulfonyl-piperazino; N′-p-toluenesulfonyl-piperazino; N′-aminocarbonyl-piperazino; N′-carbamoyl-piperazino; N′-methyl-piperazino: di(alkanol of 2 to 6 carbon atoms)-amino; or ethylenediamino and R_3 is hydrogen or methyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,843,639
PRODUCTION OF CEPHALEXIN VIA METHOXYMETHYL ESTER

Chester Sapino, Jr., East Syracuse, and Mariano Vecchio Ruggeri, Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,770
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **6 Claims**

1. The process for the preparation of cephalexin which comprises the consecutive steps of

a. reacting methoxymethyl 3-methyl-7-β-phenoxyacetamido-ceph-3-em-4-carboxylate in an anhydrous, inert water-immiscible solvent in the presence of an acid deactivating tertiary amine with at least an equimolar amount of a halogenating agent at a temperature in the range of −10° C. to −60° C.

b. mixing therewith an aliphatic alcohol of less than seven carbons while maintaining the temperature in the range of −20° C. to −70° C.

c. mixing therewith in portions at least an equimolar amount of D-(-)-2-phenylglycyl chloride hydrochloride below −30° C. and

d. mixing therewith water and a mineral acid to produce said cephalexin in the acidic, aqueous phase.

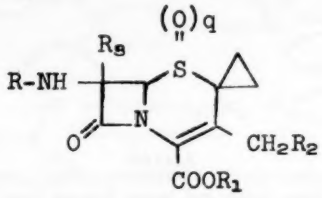
3,843,640

2-SPIROCYCLOPROPYL-3-CEPHEM ANTIBIOTICS

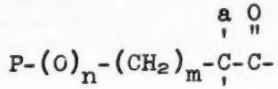
Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 28, 1972, Ser. No. 275,985
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C **15 Claims**

1. A compound of the formula



wherein R is hydrogen, C_1-C_8 alkanoyl, benzoyl, or a group represented by the formula



wherein P is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, phenyl or phenyl substituted by bromo, chloro, fluoro, C_1-C_4 lower alkyl, C_1-C_4 lower alkoxy, hydroxy or trifluoromethyl,

n is 0 or 1,

m is 0 or an integer of from 1 to 3,

a is hydrogen or C_1–C_3 alkyl,

b is hydrogen, C_1–C_3 alkyl, hydroxy, protected hydroxy, amino or protected amino;

with the limitation that when *n* is 1, P is phenyl or phenyl substituted by bromo, chloro, C_1–C_4 lower alkyl, C_1–C_4 lower alkoxy, hydroxy or trifluoromethyl, and *b* is hydrogen or C_1–C_3 alkyl;

R_1 is hydrogen, a carboxylic acid protecting group or an alkali metal or alkaline earth metal cation;

R_2 is hydrogen, C_2–C_5 alkanoyloxy or C_1–C_4 alkyloxy;

R_3 is hydrogen or methoxy;

q is 0 or 1; and when *q* is 1, R_3 is hydrogen.

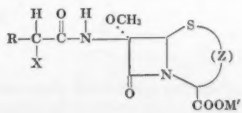
3,843,641

PROCESS FOR PREPARING PENICILLIN AND CEPHALOSPORIN COMPOUNDS

Burton G. Christensen, Scotch Plains, and Lovji D. Cama, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 203,057, Nov. 29, 1971, abandoned. This application Aug. 2, 1972, Ser. No. 277,464
Int. Cl. C07d 99/24, 99/16
U.S. Cl. 260—243 C **11 Claims**

1. The process of preparing the compound having the formula:



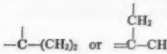
wherein

R is phenyl or a 5-membered heterocyclic ring having 1–2 hetero atoms, the latter being either S, O, or N;

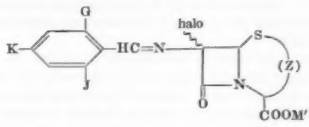
X is hydrogen, amino, carboxyl;

M′ is benzyl, benzhydryl, trimethylsilyl, trichloroethyl, methoxymethyl, benzoylmethyl, or methoxybenzyl;

(Z) is the group



wherein A is hydrogen, loweralkanoyloxy, carbamoyloxy, thiocarbamoyloxy, N-loweralkylcarbamoyloxy, N-loweralkylthiocarbamoyloxy, N,N-diloweralkylcarbamoyloxy, N,N-diloweralkylthiocarbamoyloxy, pyridinium, alkylpyridinium, halopyridinium, or aminopyridinium, all loweralkyl having 1–6 carbon atoms; is prepared which comprises treating a halo-imino compound of the formula:



wherein halo is bromo or chloro; and wherein G, K, or J each is independently nitro, methyl sulfonyl, cyano, or hydrogen, and M′ is benzhydryl, trimethylsilyl, trichloroethyl, methoxymethyl, benzoylmethyl or methoxybenzyl, with methanol in the presence of a molecular excess of silver oxide to prepare a methoxy-imino intermediate compound; followed by addition of substituted acetyl chloride having the formula:

wherein R and X are as defined above, in the optional presence of a catalytic amount of a metal catalyst having the formula:

$$ML_n$$

wherein M is palladium, platinum, nickel, ruthenium, rhodium, cobalt, or iron; L is a ligand being halo, carbonyl, cyclopentadienyl, or phenylcyano; and *n* is an integer which satisfies with valence requirements; at a temperature between about −20°C. and about 20°C.; and recovering the product thereby produced.

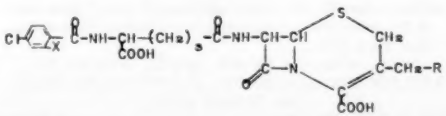
3,843,642

CEPHALOSPORIN C DERIVATIVES

Billy G. Jackson; Martha C. Stamper, and Edmond M. Bottorff, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 13, 1972, Ser. No. 306,130
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C **3 Claims**

1. A compound of the formula



in which X is hydrogen or chlorine, and R is hydrogen, acetoxy, hydroxy, or methylthio.

3,843,643

PROCESS FOR THE RECOVERY OF FORMALDEHYDE AND PHENOL CONTAINED IN WASTE WATERS

Jacob Ackerman, Gorla Minore, and Pierino Radici, Turate, both of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 21, 1972, Ser. No. 317,490
Claims priority, application Italy, Dec. 27, 1971, 32952/71
Int. Cl. C07d 55/52
U.S. Cl. 260—248.5 5 Claims

1. Process for the recovery of formaldehyde and phenol from aqueous waste solutions, and for the purification of such aqueous waste solutions, comprising:

a. adding ammonia or aqueous ammonia to an aqueous waste solution containing formaldehyde at an ambient temperature of 20° to 25°C to form hexamethylene tetramine, the molar ratio of formaldehyde to ammonia being approximately 1.5:1;

b. evaporating the water from the resulting aqueous solution of hexamethylene tetramine to form an aqueous solution with a concentration of hexamethylene tetramine of at least 64 percent by weight or to form solid hexamethylene tetramine;

c. adding said solid hexamethylene tetramine or said concentrated aqueous solution of hexamethylene tetramine to an aqueous waste solution containing phenol to form an adduct between the hexamethylene tetramine and the phenol, the temperature being between the setting temperature of the medium and approximately 60°C and the molar ratio of hexamethylene tetramine to phenol being 0.5:1 to 3:1; and

d. recovering said hexamethylene tetramine-phenol adduct.

3,843,644

BIS-P-DITHI (2,3-B:2',3'-E)PYRAZINE 2,3,7,8-TETRACARBONITRILE

Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, both of Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 104,799, Jan. 7, 1971, Pat. No. 3,761,475. This application Feb. 20, 1973, Ser. No. 333,944
Int. Cl. C07d 51/76
U.S. Cl. 260—250 BC 1 Claim

1. The compound which is bis-p-dithiino(2,3-b:2', 3'-e)-pyrazine-2,3,7,8-tetracarbonitrile corresponding to the formula

3,843,645

5,6,7,8-TETRAHYDRO-5-OXO-PYRIDO(2,3-D)-PYRIMIDINE-6-CARBONITRILES AND RELATED COMPOUNDS

Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 136,997, April 23, 1971, Pat. No. 3,726,869. This application Nov. 29, 1972, Ser. No. 310,311
Int. Cl. C07d 87/44
U.S. Cl. 260—247.2 B 1 Claim

1. 4-[(2-cyanoethyl(2-morpholinoethyl)amino]-2-phenyl-5-pyrimidine carboxylic acid, ethyl ester.

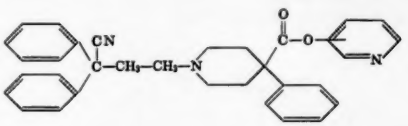
3,843,646

PYRIDYL ESTERS OF 1-(3-CYANO-3,3-DIPHENYLPROPYL)-4-PHENYLPIPERIDINE-4-CARBOXYLIC ACID

Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 15, 1971, Ser. No. 208,445
Claims priority, application Great Britain, Dec. 16, 1970, 59686/70
Int. Cl. C07d 29/32
U.S. Cl. 260—293.69 3 Claims

1. A compound of the formula



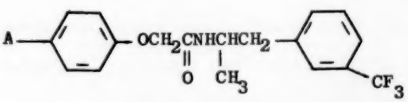
3,843,647

DERIVATIVES OF PHENOXYACETIC ACIDS

Andre Buzas, Essone, and Jacques Bruneau, Paris, both of France, assignors to Les Laboratoires Bruneau & Cie., Paris, France, a part interest

Filed June 8, 1972, Ser. No. 261,106
Claims priority, application France, June 11, 1971, 71.21267; May 25, 1972, 72.18645; May 25, 1972, 72.18646
Int. Cl. C07d 87/42
U.S. Cl. 260—247.2 A 6 Claims

1. A phenoxyacetic acid derivative of the formula



wherein A is amino, HCONH—, (C_{1-3}alkyl)CONH— or (C_{1-3}alkyl)NH— and the pharmaceutically acceptable acid addition salts thereof.

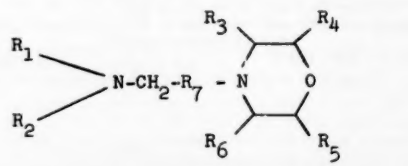
3,843,648

METHOD FOR PREPARING N-AMINO ALKYLATED MORPHOLINES

Ibrahim Selim Bechara, Boothwyn; Barton Milligan, Ardmore, and Martin Hi Ziv, Springfield, all of Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

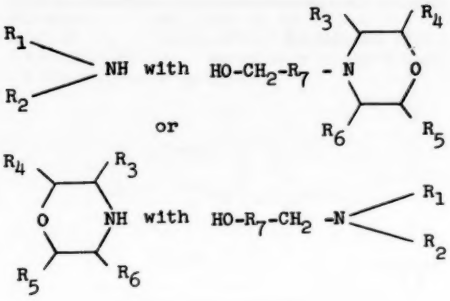
Filed Sept. 11, 1972, Ser. No. 287,907
Int. Cl. C07d 87/40
U.S. Cl. 260—247.5 R 10 Claims

1. A method for preparing N-amino alkylated morpholines having the general formula



which consists of reacting, under vapor phase and dehydration conditions comprising temperatures in the range of about 200°

to 400°C, pressures in the range of about 200 mm/Hg to 2,500 mm/Hg and a space velocity of 0.05 – 1.0 volumes of reactants per hour per volume of catalyst in the presence of a heterogeneous cracking catalyst selected from the group consisting of kaolin, silica alumina, silica magnesia, silica zirconia, a crystalline zeolitic aluminosilicate, aluminum phosphate, calcium phosphate, and iron phosphate, the following reactants



where R_1 and R_2 are each independently alkyl groups having 1 to 4 carbon atoms, R_3, R_4, R_5 and R_6 are each independently hydrogen, a methyl group or an ethyl group and R_7 is an alkylene group having 1 to 4 carbon atoms and recovering the N-amino alkylated morpholine product from the resulting effluent.

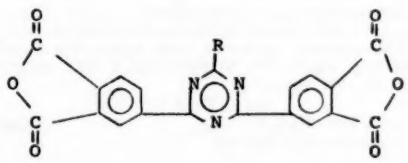
3,843,649

S-TRIAZINE TETRACARBOXYLIC ACIDS AND DIANHYDRIDES

Raymond Seltzer, New City, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed May 1, 1972, Ser. No. 248,838
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **10 Claims**

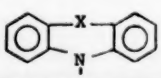
1. An s-triazine dianhydride having the formula



wherein

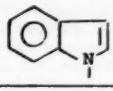
R is hydrogen, a straight or branched chain alkyl group having up to 4 carbon atoms, carboxyl, amino, phenyl, naphthyl, biphenyl or one of such aryl groups substituted with a lower alkyl group, a lower alkoxy group, a carboxy group, or up to 2 halogen atoms, diphenylamino, dinaphthylamino or a heterocyclic group selected from

(a)

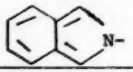


wherein X is oxygen, sulfur or a covalent bond,

(b)



(c)



(d)

, and

(e)

3,843,650

TRIS-(POLYHALOPHENOXY)-S-TRIAZINE

R. Garth Pews, and Jeffrey A Gunsher, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 9, 1972, Ser. No. 261,353
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **1 Claim**

1. Tris-(pentabromophenoxy)-s-triazine.

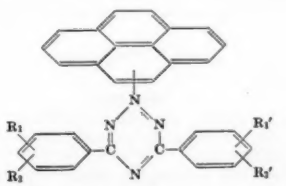
3,843,651

PYREN-A-TRIAZINES

Christian Luethi, Muenchenstein, Switzerland, assignor to Ciba-Geigy A.G., Basel, Switzerland

Filed June 19, 1972, Ser. No. 264,122
Claims priority, application Switzerland, July 12, 1971, 10205/71
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **2 Claims**

1. A Pyrenyl-triazine compound of the formula



wherein R_1, R_1 , R_2 and R_2 independently of one another are hydrogen, alkyl of 1 to 4 carbon atoms or halogen.

3,843,652

PROCESS FOR PREPARING QUINAZOLINES

Kurt Findeisen; Hans Holtschmidt, and Kuno Wagner, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

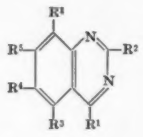
Filed May 3, 1972, Ser. No. 249,831

Claims priority, application Germany, May 21, 1971, 2125229

Int. Cl. C07d 51/48

U.S. Cl. 260—251 Q 8 Claims

1. Process for preparing quinzazoline having the formula

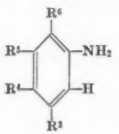


wherein R^1 and R^2, which can be the same or different, are selected from the group of chlorine, straight or branched chain haloalkyl having up to 8 carbon atoms, aromatic selected from the group of phenyl and naphthyl and such aromatic substituted by a member from the group of halogen, lower alkyl, lower alkoxy, and nitro and in addition R^1 can be hydrogen; R^3, R^4, R^5 and R^6, which can be the same or different are selected from the group of hydrogen, halogen, lower alkyl, lower alkoxy

which comprises the step of reacting a halogen compound having the formula

$$R^1 - CCl_2 - N = CCl - R^2$$

wherein R^1 and R^2 are defined previously, with an aromatic amine having the formula



wherein R^3, R^4, R^5 and R^6 are defined previously, or the hydrochloride salt thereof, at temperatures in the range from 0° to 200°C.

3,843,653

5,6,12,13-DI-ISOQUINO-(4,3-B:4',3'-E)-PYRAZINE-5,12-DIONES

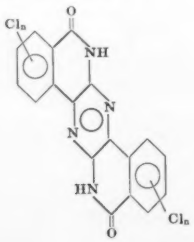
Gerald Richard Aldridge, Elizabeth, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,875

Int. Cl. C07d 51/62

U.S. Cl. 260—250 BN 2 Claims

1. A compound of the formula



wherein each *n* is an integer of 0 to 4, inclusive.

3,843,654

3-AMINO-2,3-DIHYDRO-4(1H) QUINAZOLINONES

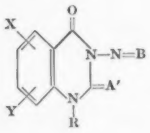
Frederick K. Kirchner, Bethlehem, and Andrew W. Zalay, Albany, both of N.Y., assignors to Sterling Drug, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 553,052, May 26, 1966, abandoned, which is a continuation-in-part of Ser. No. 441,922, March 22, 1965, abandoned, which is a continuation-in-part of Ser. No. 153,227, Nov. 17, 1961, Pat. No. 3,375,250. This application July 7, 1969, Ser. No. 839,708

Int. Cl. C07d 51/48

U.S. Cl. 260—256.4 F 16 Claims

1. A compound of the formula



wherein:

B is

1. any pair of the monovalent groups R,
2. a divalent group A', or
3. the group =C=A';

R is H, lower-alkyl, lower-alkenyl, three to eight-ring carbon cycloalkyl, three to eight ring carbon cycloalkyl-lower-alkyl, Ar, or Ar-lower-alkyl where Ar is phenyl or phenyl substituted by from one to three substituents selected from lower-alkyl, lower-alkoxy, lower-alkylmercapto, lower-alkanesulfinyl, lower-alkanesulfonyl, halogen, nitro or trifluoromethyl, wherein cycloalkyl in both occurrences has no more than eight carbon atoms;

is polymethylene, azapolymethylene, N-lower-alkyl-azapolymethylene, oxapolymethylene, or thiapolymethylene each containing from three to eight carbon atoms; and,

X and Y are each H, lower-alkyl, lower-alkoxy, lower-alkylmercapto, lower-alkanesulfinyl, lower-alkanesulfonyl, halogen, nitro or trifluoromethyl.

3,843,655

HETEROCYCLIC COMPOUNDS AND COMPOSITIONS

Francis Leslie Charles Baranyovits, and Ian Trevor Kay, both of Wokingham, England, assignors to Imperial Chemical Industries Limited, London, England

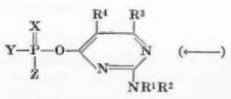
Filed Apr. 25, 1972, Ser. No. 247,353

Claims priority, application Great Britain, May 6, 1971, 13477/71; Aug. 9, 1971, 37298/71; Oct. 5, 1971, 46229/71; Dec. 15, 1971, 58224/71

Int. Cl. C07d 51/36

U.S. Cl. 260—256.5 R 3 Claims

1. Compounds of formula:



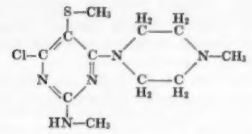
wherein X is oxygen or sulphur; Y and Z, which may be the same or different, are alkoxy containing up to six carbon atoms; R^3 and R^4, which may be the same or different, are hydrogen or alkyl containing up to six carbon atoms; R^1 is alkyl containing up to six carbon atoms; and R^2 is a group $R^5.CO$— where R^5 is hydrogen, alkyl containing up to six carbon atoms, alkoxy containing up to six carbon atoms or alkyl-substituted amino containing up to six carbon atoms.

3,843,656
2-METHYLAMINO-4'-METHYL-4-PIPERAZINYL-6-CHLORO-5-METHYLTHIO-PYRIMIDINE, SALTS THEREOF, AND PROCESS FOR THEIR PREPARATION

Pierre Marie Joseph Obellianne, Paris; Pierre Andre Carbonnel, Eaubonne; Gerard Paul Marie Henri Loiseau, Sceaux, and Rene Jean Millischer, Pringy, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Mar. 1, 1973, Ser. No. 337,222
Claims priority, application France, Jan. 5, 1973, 73.7206981
Int. Cl. C07d *57/12*
U.S. Cl. 260—256.5 R 10 Claims

1. The compound of the formula:



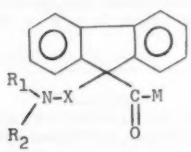
and pharmaceutically acceptable acid addition salts.

3,843,657
9-DIALKYLAMIN OALKYL-N-SUBSTITUTED FLUORENE-9-CARBOXAMIDES

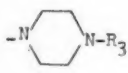
Harman S. Lowrie, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 8, 1972, Ser. No. 313,357
Int. Cl. C07c *103/28*; C07d *51/70*
U.S. Cl. 260—268 TR 4 Claims

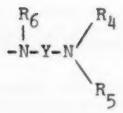
1. A compound of the formula



wherein R_1 and R_2 are lower alkyl or benzyl radicals, X is an alkylene radical containing 1 to 7 carbons, and M is a diamine radical of the formula:



or



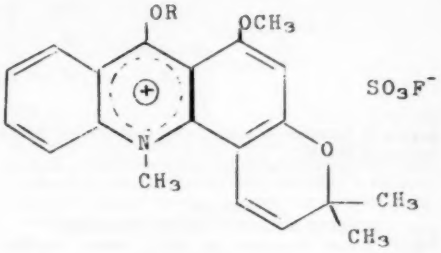
in which R_3, R_4 and R_5 are lower alkyl radicals, R_6 is an alkyl or benzyl radical, and Y is an alkylene radical containing 1–7 carbons.

3,843,658
O-METHYL ACRONYCINE SALT

Edward L. Smithwick, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 18, 1973, Ser. No. 371,082
Int. Cl. C07d *37/16*
U.S. Cl. 260—279 R 2 Claims

1. A compound of the following structure



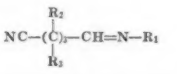
wherein R is C_1–C_3 alkyl.

3,843,659
PROCESS FOR THE PREPARATION OF PIPERIDINES

Siemen H. Groen; Johannes J. M. Deumens, both of Geleen, and Petrus A.M.J. Stijfs, Oirsbeek, all of Netherlands, assignors to Stamicabon B.V., Galeen, Netherlands

Filed Mar. 9, 1971, Ser. No. 122,522
Claims priority, application Netherlands, Mar. 12, 1970, 7003508The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.
Int. Cl. C07d *29/06*
U.S. Cl. 260—293.52 6 Claims

1. Process for the preparation of piperidine or a C-substituted piperidine comprising reacting a compound of the formula:



wherein R_1 is selected from the group consisting of lower alkyl of 1 – 7 carbon atoms, cycloalkyl, aralkyl and aryl; and R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl of 1–7 carbon atoms; with at least 3 moles of hydrogen per mole of imine to be converted, in the presence of a catalyst and in the absence of ammonia to form

a primary amine of the formula:

$$R_1—NH_2$$

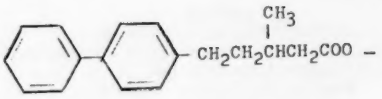
wherein R_1 has the significance given above, and the corresponding piperidine or C-substituted piperidine.

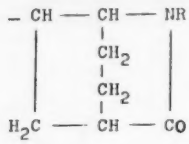
3,843,660
3-OXO-2-AZABICYCL [2,2,2] OCTAN-6-EXO-YL-5-(4-BIPHENYL)-3-METHYLVALERAIE AND CONGENERS

John H. Dygos, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed July 21, 1972, Ser. No. 273,680
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 5 Claims

1. A compound of the formula





wherein R represents hydrogen, alkyl having fewer than 8 carbons, or benzyl.

3,843,661

BENZENE-SULFONYL SEMICARBAZIDES

Helmut Weber, Frankfurt am Main; Walter Aumuller, Kelkheim/Taunus; Rudi Weyer, Frankfurt am Main; Karl Muth, Kelkheim/Taunus, and Kurt Stach, Mannheim-Waldhof, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

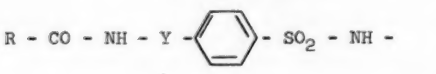
Division of Ser. No. 750,747, Aug. 7, 1968, Pat. No. 3,705,151. This application June 2, 1972, Ser. No. 259,300

Claims priority, application Germany, Aug. 12, 1967, 53221

Int. Cl. C07d *29/34*

U.S. Cl. 260—293.66 **7 Claims**

1. A benzene-sulfonyl semicarbazide of the formula



wherein

R represents

a. phenyl which may carry one or two substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkanoyl, halogen or tri-fluoro-methyl,

b. thienyl which may carry one or two substituents selected from the group consisting of halogen, lower alkyl, or lower alkoxy,

Y represents $-CH_2-CH_2-$, $-CH_2-CH-(CH_3)-$ or $CH-(CH_3)-CH_2-$

R^1 represents

3-azaspiro-[5,5]-undecyl-3

or a salt thereof formed from a pharmaceutically acceptable base.

3,843,662

2-HALO-5-(SUBSTITUTED PIPERIDINO SULFONYL) BENZOIC ACIDS

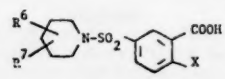
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 206,514, Dec. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 72,156, Sept. 14, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,213

Int. Cl. C07d *29/34*

U.S. Cl. 260—293.73 **14 Claims**

1. A compound selected from the group consisting of those of the formula



the unsubstituted amide, the amides of pharmacalogically acceptable amino acids, the lower alkyl esters and the salts thereof with pharmacologically acceptable bases, wherein

X is chloro;

R^6 is 3-benzyloxy; and

R^7 is hydrogen.

3,843,663

1,8-NAPHTHYRIDINE COMPOUNDS

Haydn Windsor Richard Williams, Dollard des Ormeaux, Quebec, and Clarence Stanley Rooney, Beaconsfield, Quebec, both of Canada, assignors to Merck Sharp & Dohme (I.A.), Rahway, N.J.

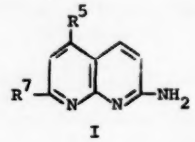
Filed Apr. 11, 1973, Ser. No. 350,285

Claims priority, application Canada, May 5, 1972, 141,472

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 N **8 Claims**

1. A 1,8-naphthyridine having the structure I



I

wherein R^5 is selected from the group consisting of lower alkyl, trifluoromethyl, pentafluoroethyl, phenyl, pyridyl, thienyl, and naphthyl; R^7 is selected from the group consisting of lower alkyl, trifluoromethyl and pentafluoroethyl, and at least one of the variable radicals R^5 or R^7 is trifluoromethyl or pentafluoroethyl.

3,843,664

SUBSTITUTED NAPHTHO PYRAZOLES

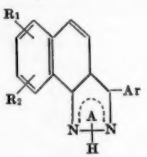
Robert V. Coombs Chatham, and William J. Houlihan, both of Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Feb. 20, 1973, Ser. No. 333,557

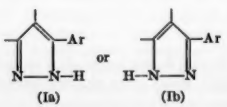
Int. Cl. C07d *31/42*

U.S. Cl. 260—296 T **3 Claims**

1. A compound of the formula



where ring A represents the structures



(Ia) (Ib)

Ar is

and

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, lower alkoxy, trifluoromethyl or

R_1 and R_2 together independently represent methylenedioxy attached to adjacent carbon atoms,

provided that when R_2 and R_3 are independently trifluoromethyl or tertiary butyl they are on other than adjacent carbon atoms, or or a pharmaceutically acceptable acid addition salt thereof.

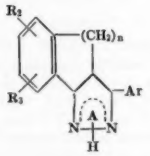
3,843,665

PROCESS FOR PREPARING SUBSTITUTED INDENO, NAPHTHO AND CYCLOHEPTA PYRAZOLES

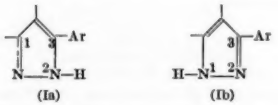
Robert V. Coombs, Chatham, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Apr. 11, 1973, Ser. No. 350,141
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 T **17 Claims**

1. A process for preparing a compound of the formula

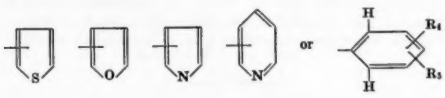


where ring A represents the structures



(Ia) (Ib)

n is 1, 2, or 3;
Ar is

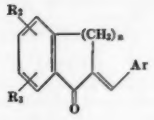


and

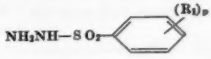
R_2, R_3, R_4, and R_5 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy, trifluoromethyl or

R_2 and R_3 or R_4 and R_5 together independently represent methylenedioxy attached to adjacent carbon atoms,

provided that when R_2 and R_3 or R_4 and R_5 are independently trifluoromethyl or tertiary butyl they are not on adjacent carbon atoms, and when n is 1 and R_2 and R_3 are hydrogen, Ar is other than unsubstituted phenyl, which comprises reacting a compound of the formula



with a compound of the formula



where

p is 0, 1 or 2

R_1 is lower alkyl having 1 to 3 carbon atoms and

n, R_2, R_3, Ar and the proviso are as defined above in an inert solvent at a temperature of 50°C. to 100°C. in the presence of an acid catalyst, selected from mineral acids, acetic acid or p-toluenesulfonic acid.

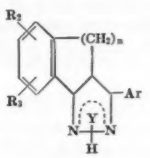
3,843,666

PROCESS FOR PREPARING SUBSTITUTED INDENO, NAPHTHO AND CYCLOHEPTA PYRAZOLES

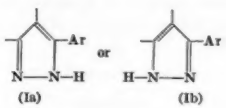
Robert V. Coombs, Chatham, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed May 29, 1973, Ser. No. 364,697
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 T **17 Claims**

1. A process for preparing a compound of the formula

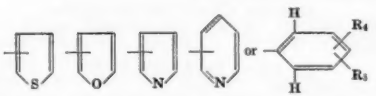


where ring (Y) represents the structures



(Ia) (Ib)

n is 1,2 or 3;
Ar is

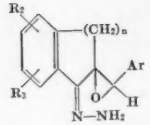


and

R_2, R_3, R_4 and R_5 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy, trifluoromethyl or

R_2 and R_3 or R_4 and R_5 together independently represent methylenedioxy attached to adjacent carbon atoms,

provided than when R_2 and R_3 or R_4 and R_5 are independently trifluoromethyl or tertiary butyl they are not on adjacent carbon atoms, and when n is 1 and R_2 and R_3 are hydrogen, Ar is other than unsubstituted phenyl which comprises cyclizing a compound of the formula



where *n*, Ar, R_2, R_3 and the proviso are as defined above with a lower alkyl carboxylic acid or an alkyl or aryl sulfonic acid at a temperature of about 75°C to about 175°C.

3,843,667

N-IMIDAZOLE COMPOUNDS AND THEIR COMPLEX METAL DERIVATIVES

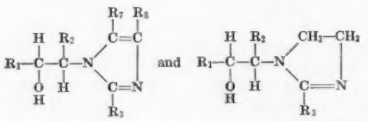
Martin E. Cupery, 7 Crestfield Rd., Wilmington, Del. 19810

Filed Sept. 12, 1973, Ser. No. 396,605

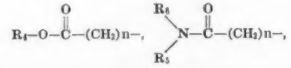
Int. Cl. C07d *49/34*

U.S. Cl. 260—299 **4 Claims**

1. A compound from the group consisting of:



or a complex thereof with a metal ion of atomic number greater than 27. wherein: R_1 and R_2 are selected from the group consisting of hydrogen, alkyl having 6 to 40 carbon atoms, cycloalkyl having 5 to 12 carbon atoms, alkyl substituted cycloalkyl having 5 to 40 carbon atoms,



lower alkyl phenyl oxymethylene; R_4 is alkyl having 1 to 13 carbon atoms; R_5 and R_6 are hydrogen and lower alkyl; n is an integer in the range of 1 to 18; R_3 is hydrogen and lower alkyl; R_7 and R_8 are hydrogen, lower alkyl and R_7 and R_8 together with their carbon atoms form an benzene ring; with the proviso that no more than one of R_1 and R_2 is hydrogen or a complex thereof with a metal ion with an atomic number greater than **26.**

3,843,668

CERTAIN 4-SUBSTITUTED AMINO-2,1,3-BENZOTHIADIOZOLES

Peter Neumann, Berne, Switzerland, assignor to Sandoz-Wander Inc., Hanover, N.J.

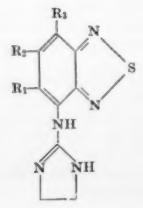
Filed May 8, 1973, Ser. No. 358,274

Claims priority, application Switzerland, May 9, 1972, 6865/72

Int. Cl. C07d *91/68, 99/10*

U.S. Cl. 260—304 **29 Claims**

1. A compound of the formula:



wherein each of R_1, R_2 and R_3, independently, is hydrogen, halogen, alkyl, alkoxy, nitro, cyano, hydroxy or alkylthio, each of the alkyl groups thereof having 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,843,669

CERTAIN CARBAMOYLOXYIMINO-AZOLIDINES

Nazim Punja, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

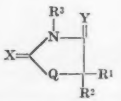
Filed May 4, 1972, Ser. No. 250,119

Claims priority, application Great Britain, May 7, 1971, 13723/71

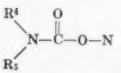
Int. Cl. C07d *91/14*

U.S. Cl. 260—306.7 **5 Claims**

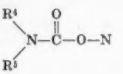
1. A compound of the formula:



wherein Q is oxygen or sulphur, or the sulphoxide or sulphone group; R^1 and R^2 which may be the same or different are hydrogen or alkyl containing up to four carbon atoms; R^3 is hydrogen, alkyl containing up to eight carbon atoms, allyl, benzyl, dimethylamino, methyl-thiomethyl, ethoxycarbonyl-methyl, or halo-substituted pyridyl; and either (i) X is a group of the formula:



where R^4 and R^5, which may the same or different, are hydrogen, alkyl containing up to four carbon atoms, phenyl, chloro-substituted phenyl, acetyl, chloromethyl, methoxymethyl, ethoxymethyl or ethylthiomethyl; and Y is oxygen, sulphur or alkylimino containing up to four carbon atoms; or (ii) Y is a group of the formula:



where R^4 and R^5, which may be the same or different, are hydrogen, alkyl containing up to four carbon atoms, phenyl, chlorosubstituted phenyl, acetyl, chloromethyl, methoxymethyl, ethoxymethyl or ethylthiomethyl; and X is oxygen, sulphur or alkylimino containing up to four carbon atoms.

3,843,670

CERTAIN 4-SUBSTITUTED-1-THIADIAZOLYL-3-ALKYL-2,5-DIOXO-IMIDAZOLIDINES AND A SYNTHESIS

Hans Moser, Magden, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

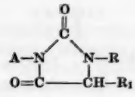
Filed Sept. 27, 1972, Ser. No. 292,709

Claims priority, application Switzerland, Sept. 30, 1971, 14213/71

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.8 D **9 Claims**

1. 1-thiadiazolyl-2,5-dioxo-imidazolidines of formula I



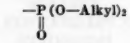
(I)

wherein

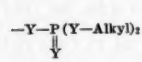
A represents a 1,2,4-thiadiazolyl-(5)- or 1,3,4-thiadiazolyl-(5)-radical which is substituted on the only substitutable C-atom, in the 3- or 2-position, by halogen-alkyl, alkylthio, alkylsulphinyl, alkylsulphonyl or dialkylsulphamoyl, the alkyl groups of which contain from 1 to 3 carbon atoms,

R represents a C_1–C_3 alkyl radical,

R_1 represents halogen, or a radical $—OR_2$ wherein R_2 denotes hydrogen, or the group —CO-Z wherein Z stands for alkylamino, dialkylamino, alkyl, halogenoalkyl or alkylthio, the alkyl groups of which contain from 1 to 3 carbon atoms, and, finally, wherein R_1 also represents a group of the formula



or



wherein Alkyl represents C_1–C_3 alkyl groups and the individual substituents Y independently of each other represent oxygen or sulphur.

3,843,671

5-(OXAZOLYL)- AND 5-(THIENYL)-SALICYCLIC ACIDS

Lewis H. Sarett, Skillman, and William V. Ruyle, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 44,867, June 9, 1970, Pat. No. 3,717,659, and a continuation-in-part of Ser. No. 673,273, Oct. 6, 1967, Pat. No. 3,558,641. This application Sept. 7, 1972, Ser. No. 287,151

Int. Cl. C07d *63/12, 85/44*

U.S. Cl. 260—307 R **2 Claims**

1. 5-(2-Oxazolyl)salicylic acid.

3,843,672

CYANO DERIVATIVES OF 2-SUBSTITUTED-2-OXAZOLINES

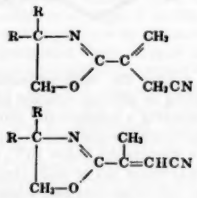
Bryce E. Tate, Niantic, and Rudolph G. Berg, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed July 6, 1973, Ser. No. 376,955

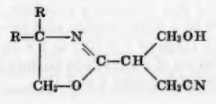
Int. Cl. C07d *85/38*

U.S. Cl. 260—307 F **4 Claims**

1. A compound selected from those of the formulae:



and



wherein R is alkyl having one to four carbon atoms.

3,843,673

BIS-1(1,2,4-TRIAZOLE-3-SELENOLS)

John Colin Brown, and Patrick Joseph Keogh, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

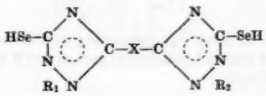
Filed Dec. 17, 1971, Ser. No. 209,339

Claims priority, application Great Britain, Dec. 22, 1970, 60801/70

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **12 Claims**

1. A 5,5′-bis(1,2,4-triazole-3-selenol) of the formula



wherein each of R_1 and R_2 is selected from the group consisting of hydrogen, alkyl of 1–3 carbon atoms, phenyl, tolyl, chlorophenyl, methoxyphenyl and benzyl and X is selected from the group consisting of a direct link, an alkylene chain having 1–10 carbon atoms, phenylene, naphthylene, —NH— and a linking group $—(CH_2)_m—Y—(CH_2)_n—$, wherein Y is an oxygen or sulphur atom and each of *m* and *n* is zero or an integer of from 1 to 5.

3,843,674

DIGLYCIDYLBENZIMIDAZOLONES

Daniel Porret, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

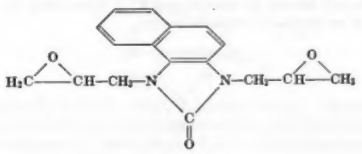
Filed Dec. 29, 1972, Ser. No. 319,268

Claims priority, application Switzerland, Jan. 5, 1972, 109/72

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **1 Claim**

1. A diglycidylbenzimidazolone compound of the formula



3,843,675

N-HETEROCYCLIC POLYGLYCIDYL COMPOUNDS CONTAINING ESTER GROUPS

Daniel Porret, Binningen, and Friedrich Stockinger, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

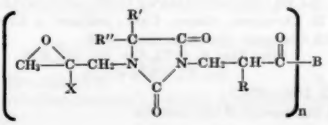
Filed Feb. 3, 1972, Ser. No. 223,356

Claims priority, application Switzerland, Feb. 24, 1971, 2657/71

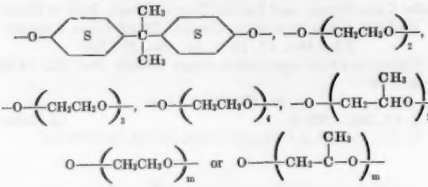
Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **10 Claims**

1. A polyglycidyl compound having the formula



wherein X is hydrogen or methyl, *n* is 2 or 3, R is hydrogen or methyl, R′ and R″ each is hydrogen or lower alkyl of one to four carbon atoms or wherein R′ and R″ together are tetramethylene or pentamethylene; B when *n* is 2 is —O-alkylene-O— of two to 12 carbon atoms,



wherein *m* is an integer corresponding to an average molecular weight of 250 to 2,500 for the groups and B when *n* is 3 is $CH_3CH_2C(CH_2O-)_3$.

3,843,676
PRODUCTION OF SUBSTITUTED IMIDAZOLES

Hermann Spaenig, Limburgerhof; Toni Dockner, Meckenheim, and Anton Frank, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

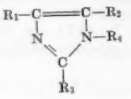
Filed Feb. 8, 1972, Ser. No. 224,618

Claims priority, application Germany, Feb. 13, 1971, 2106877

Int. Cl. C07d *49/36*

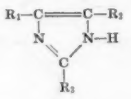
U.S. Cl. 260—309 **13 Claims**

1. In a process for the production of a substituted imidazole of the formula:



(I)

in which R^1, R^2 and R^3 may be identical or different and each respectively denotes hydrogen, alkyl of 1–12 carbon atoms, cyclohexyl, benzyl, or phenyl, and R^4 is lower alkyl, by reaction of an imidazole of the formula:



(II)

in which R^1, R^2 and R^3 have the meanings given above with a compound of the formula:

$$R^4 - O - R^5 \text{ (III)}$$

in which R^4 has the meanings given above and R^5 is hydrogen or lower alkyl at a temperature of from 200° to 450° C in the presence of (a) an oxide or phosphate of calcium, aluminum, titanium or thorium as catalyst, the improvement which comprises carrying out said reaction in the presence of as an additional catalyst, at least 0.01 percent by weight, based on said imidazole (II), of (b) a phosphoric acid or an alkyl ester of a phosphoric acid with alkyl groups having up to 12 carbon atoms.

3,843,677
5-CHLOROTHIOIMINO IMIDAZOLIDINES

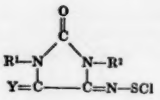
James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 8, 1972, Ser. No. 251,479

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **4 Claims**

1. A compound of the formula



wherein Y is oxygen or sulfur, R^1 is alkyl of 1 to 6 carbon atoms, and R^2 is, phenyl, phenyl substituted with 1 to 3 halogens of atomic number 9 to 35, alkphenyl of 7 to 10 carbon atoms or alkphenyl of 7 to 10 carbon atoms substituted with 1 to 3 halogens of atomic number 9 to 35.

3,843,678
PROCESS FOR THE PRODUCTION OF SUBSTITUTED INDAZOLES

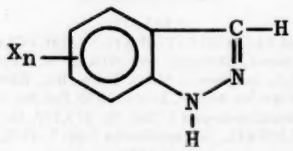
Eugene P. DiBella, Rochelle Park, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 124,472, March 15, 1971, abandoned. This application Mar. 16, 1972, Ser. No. 235,424

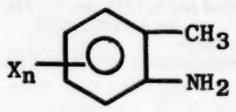
Int. Cl. C07d *49/18*

U.S. Cl. 260—310 C **25 Claims**

1. In the process for the production of indazoles having the structural formula



wherein X represents halogen, nitro, $—SO_2R$, cyano, acoyl, acoylamino, aroylamino, alkyl, alkoxy, carboalkoxy, —COR, —CHO, or trihalomethyl; R represents monoalkylamino, dialkylamino, hydroxy, halogen, alkyl, haloalkyl, phenyl, or substituted phenyl wherein the substituent is halogen, alkyl, or nitro; and *n* represents a number in the range of 1 to 4, in which a substituted o-toluidine having the structural formula



wherein X and *n* have the aforementioned significance, is diazotized by adding an aqueous solution of sodium nitrite to a suspension containing a substantially equimolar amount of a salt of said substituted o-toluidine in an aqueous mineral acid medium at a temperature below 10°C. thereby forming a solution of the diazonium salt of said o-toluidine in aqueous mineral acid and converting said diazonium salt to the corresponding indazole, the improvement that comprises adding the solution of said diazonium salt in aqueous mineral acid to an aqueous solution that contains a stoichiometric excess of an alkali metal salt of a water-soluble acid having a dissociation constant in the range of 1×10^{-8} to 1×10^{-5} while maintaining the temperature of the reaction mixture between 10°C. and 100°C. and its pH between 4 and 10.

3,843,679

O-ALKYL-O-[1,3-DISUBSTITUTED-PYRAZOL(5)YL]-(THIONO)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, and Wolfgang Behrenz, both of Koeln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

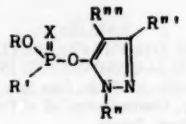
Filed Apr. 17, 1973, Ser. No. 351,891

Claims priority, application Germany, Apr. 21, 1972, 2219484

Int. Cl. C07f 9/16, 9/40

U.S. Cl. 260—310 R 7 Claims

1. An O-pyrazolo(thiono)-phosphoric(phosphonic) acid ester of the formula



(I)

in which

R is alkyl of one to six carbon atoms,

R′ is alkyl or alkoxy of one to six carbon atoms or phenyl,

R″ is lower alkyl, cyano-lower alkyl or 1,1-dioxythiolane,

R‴ is carbo-lower alkoxy, carbamoyl, mono-lower alkylcarbamoyl or di-lower alkylcarbamoyl,

R⁗ is hydrogen, chlorine or alkyl of one to six carbon atoms, and

X is oxygen or sulfur.

3,843,680

PROCESS FOR PRODUCING DI-OR POLYNUCLEAR HETEROCYCLIC COMPOUNDS

Marcello Massi Mauri, San Donato Milanese, and Pietro Moggi, Milan, both of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

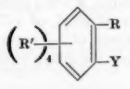
Filed Sept. 30, 1971, Ser. No. 185,075

Claims priority, application Italy, Sept. 30, 1970, 30357/70The portion of the term of this patent subsequent to Nov. 20, 1990, has been disclaimed.

Int. Cl. C07d 27/56

U.S. Cl. 260—319.1 12 Claims

1. In a cyclic process for the oxidative catalytic dehydrocyclization of a substituted aromatic compound of the formula



wherein R is lower alkyl containing at least two carbon atoms; R′ is hydrogen, alkyl, aryl, alkoxy, nitro, halogen, cyano, amino, hydroxy, —SH, or —SO_3H; Y is OH, SH, NH_2, monoalkylamino or monoarylamino by contacting said substituted aromatic compound with oxygen or an oxygen-containing gas and an activated silica catalyst at a temperature ranging from 350° C. to 700° C. and a pressure of from about 1 mmHg to 10 atmospheres and a molar ratio of oxygen or oxygen-containing gas to substituted aromatic compound ranging from 0.2:1 to 5:1; which comprises the steps of feeding said substituted aromatic compound to a reactor wherein said dehydrocyclization takes place under the abovesaid conditions, subsequently conveying the resultant effluent to a separator and then through purification treatment wherein the desired heterocyclic product is recovered while intermediate products are recycled to the reactor; the improvement which comprises the steps of heat-exchanging said effluent with pre-reacted feed after it leaves the reactor and removing uncondensed products and vapors from said separator which are thereafter washed by the stream of feed compound.

3,843,681

1-CARBOXAMIDO PYRANO (THIOPYRANO) [3,4-6]INDOLE DERIVATIVES

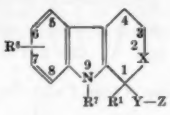
Christopher A. Demerson, St. Laurent, Quebec; Leslie G. Humber; Thomas A. Dobson, both of Dollard des Ormeaux, Quebec, and Ivo L. Jirkovsky, Montreal, Quebec, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,895

Int. Cl. C07d 27/56

U.S. Cl. 260—326.14 R 8 Claims

1. A compound of the formula:



wherein R^1 is lower alkyl having from one to six carbon atoms; R^6 is hydrogen, chlorine, methyl, methoxy or benzyloxy; R^7 is hydrogen or lower alkyl having from one to six carbon atoms; X is oxygen or sulfur; Y is CO, CH_2CO or CH_2CH_2CO; and Z is amino, methylamino, ethylamino, isopropylamino, dimethylamino, diethylamino or phenylamino.

3,843,682

2-CHLOROSULFINYL-3-IMIDO-AZETEDIN-4-ONES

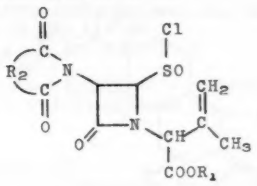
Stjepan P. Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 15, 1972, Ser. No. 253,385

Int. Cl. C07d 27/52

U.S. Cl. 260—326 S 4 Claims

1. A compound having the formula



in which R_1 is C_1–C_4 alkyl, 2,2,2-trihaloethyl, 2-iodoethyl, benzyl, p-nitrobenzyl, succinimidomethyl, phthalimidomethyl, p-methoxybenzyl, benzhydryl, C_5–C_8 alkanoyloxymethyl, phenacyl, or p-halophenacyl; and

R_2 is [C_2–C_4 alkylene,]1,2-cyclohexylene, 1,2-phenylene, 1,2-cyclohexenylene, or a substituted derivative of any of the above having from 1 to 4 substituents selected from the group consisting of C_1–C_3 alkyl, C_1–C_3 alkoxy, nitro, fluoro, chloro, bromo, or iodo.

3,843,683

α-[3-(4-CHLOROBENZOYL)-2-METHYL-6-METHOXY-1-NDOLE]-ACETIC ACID

Malcolm R. Bell, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 9,945, Feb. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 706,802, Feb. 20, 1968, Pat. No. 3,557,142. This application Claims priority, application Great Britain, Dec. 29, 1969, 7719/69

Nov. 22, 1971, Ser. No. 201,142

Int. Cl. C07d 27/56

U.S. Cl. 260—326.13 R 1 Claim

1. α-[3-(4-Chlorobenzoyi)-2-methyl-6-methoxy-1-indole]-acetic acid.

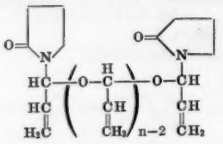
3,843,684

ALPHA, OMEGA-PYRROLIDONYL POLYACROLEIN

David Irwin Randall, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,983
Int. Cl. C07d 27/08
U.S. Cl. 260—326.25 3 Claims

1. A polymer having the following structural formula:



wherein n has a value of from 3 – 25.

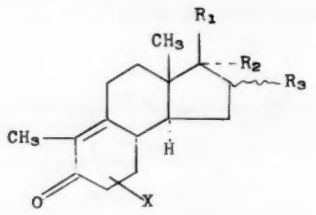
3,843,685

PROCESSES FOR THE PREPARATION OF DESA-5-KETO STEROIDS

Milan Radoje Uskokovic, Upper Montclair, and Thomas Henry Williams, Passaic, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

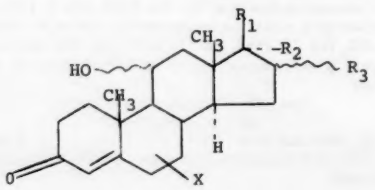
Division of Ser. No. 499,094, Oct. 20, 1965, Pat. No. 3,574,761, Continuation-in-part of Ser. No. 400,206, Sept. 29, 1964, Pat. No. 3,412,107. This application June 17, 1968, Ser. No. 737,278
Int. Cl. C07d 11/00
U.S. Cl. 260—338 6 Claims

1. A process for the preparation of a desA-androst-9-en-5-one of the formula:



wherein R_1 is hydroxy, lower alkanoyloxy, carboxyloweralkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, benzhydryloxy, trityloxy, allyloxy or lower alkoxy-lower alkoxy; R_2 is hydrogen or lower alkyl; R_1 and R_2 taken together are selected from the group consisting of (17β-OH,17α-lower alkanoic acid lactone), lower alkylenedioxy and oxo; R_3 is hydrogen, lower alkyl, hydroxy, lower alkanoyloxy, carboxyloweralkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, benzhydryloxy, trityloxy, allyloxy, or lower alkoxy-lower alkoxy; and X is a substituent in the 6- or 7-position selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio and halogen;

comprising oxidative ring opening by ozonization or hydrogen peroxide a compound of the formula:



wherein R_1, R_2, R_3, and X are as above;

to form the corresponding 5-oxo-11-hydroxy-3,5-secoA-norandrostan-3-oic acid 3,11-lactone; forming an alkali metal salt of said acid 3,11-lactone; pyrolyzing said alkali metal salt by heating said alkali metal salt to a temperature of about 200°C. to about 350°C. to form the corresponding 11-hydroxy-desA-androstan-5-one; esterifying said 11-hydroxy-desA-androstan-5-one to form a leaving group in the 11-position selected from the group consisting of toluene sulfonate, lower alkyl sulfonate and nitrophenyl sulfonate; and eliminating said leaving group from said 11-position to form said desA-androst-9-en-5-one.

3,843,686

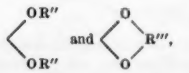
PROCESS FOR THE PREPARATION OF 17-SUBSTITUTED-Δ4-GONENES AND INTERMEDIATES

Julien Warnant, Neilly-sur-Seine; Jean Jolly, Clichy-sous-Bois, and Robert Joly, Montmorency, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 63,277, Aug. 12, 1970, Pat. No. 3,702,334, which is a continuation-in-part of Ser. No. 640,507, May 23, 1967, Pat. No. 3,591,606. This application June 29, 1972, Ser. No. 267,364
Int. Cl. C07d 13/00
U.S. Cl. 260—340.9 5 Claims

1. 3,5-diketals of 13β-alkyl-17α-R^{IV}-17β-OR-4,5-secogonane-3,5-diones of the formula

wherein R is a member selected from the group consisting of hydrogen and the acyl of an organic carboxylic acid having from one to 18 carbon atoms selected from the group consisting of alkanoic acids, alkenoic acids, cycloalkyl-carboxylic acids, cycloalkylalkanoic acids, phenylalkanoic acids, phenoxyalkanoic acids, furane-2-carboxylic acids, nicotinic acids and β-keto-alkanoic acids, R′ is an alkyl having from one to four carbon atoms selected from the group consisting of methyl, ethyl, n-propyl and n-butyl, R^{IV} is a member selected from the group consisting of lower alkyl, of 1–7 carbon atoms lower alkenyl, and lower alkynyl, of 2–7 carbon atoms X represents a member selected from the group consisting of



wherein R″ is a lower alkyl and R‴ is selected from the group consisting of lower alkylene and (6-methylbenzyl)-ethylene; and A is selected from the group consisting of two hydrogens and a double bond.

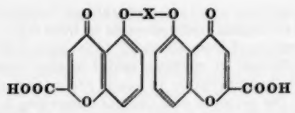
3,843,687

METHOD FOR THE PREPARATION OF DERIVATIVES OF 5-HYDRO XY-2-CARBOXYCHROMONE

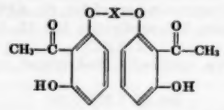
Giorgio Pifferi, Milan, Italy, assignor to I.S.F., S.p.A., Milan, Italy

Filed June 6, 1972, Ser. No. 260,273
Claims priority, application Italy, July 2, 1971, 26560/71
Int. Cl. C02d 7/34
U.S. Cl. 260—345.2 3 Claims

1. In a method for the preparation of a 5-hydroxy-2-carboxychromone of the formula:



wherein X is alkylene or hydrogen-substituted alkylene group have from three to seven carbon atoms and carrying an alcoholic (—CH—OH) group inserted in the alkylene chain, by alkaline hydrolysis of the corresponding lower alkyl esters, said esters being prepared starting from the corresponding bis-phenoxy derivative, the improvement which comprises reacting the corresponding bis-phenoxy derivative of the formula:



with a lower dialkyl oxalate in an alcoholic protic solvent in the presence of stoichiometric amounts of a lower alkali metal alcoholate at a temperature not above 50°C for a period of time not longer than 3 hours, the cyclization being carried out by merely adding an anhydrous mineral acid to the reaction mass.

3,843,688

N-CHLOROTHIO-7-(2,3-DIHYDROBENZOFURANYL)-CARBAMATE PRODUCTION

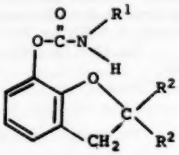
James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 8, 1972, Ser. No. 250,887

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 R **8 Claims**

1. A process for producing an N-chlorothio derivative of a carbamate reactant of the formula



wherein R^1 is hydrogen or alkyl of one to six carbon atoms and R^2 individually is hydrogen or alkyl of one to six carbon atoms, which comprises reacting substantially equimolar amounts of the carbamate reactant and sulfur dichloride in the presence of an organic base acceptor and maintaining during said reaction the moles of uncomplexed acceptor to the total moles of carbamate reactant and N-chlorothio carbamate product at a ratio of less than 0.2:1 by the controlled addition of the acceptor to a mixture of the carbamate reactant and sulfur dichloride in an inert diluent.

3,843,689

N-CHLOROTHIO CARBAMATES

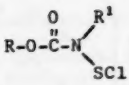
Melancthon S. Brown, deceased, late of Berkeley, Calif., and Gustave K. Kohn, administrator, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. Nos. 88,105, Nov. 9, 1970, Pat. No. 3,679,733, and Ser. No. 189,732, Oct. 15, 1971. This application May 8, 1972, Ser. No. 250,908

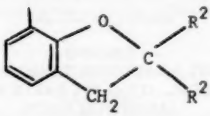
Int. Cl. C07c *69/62*; **C07d** *5/36*

U.S. Cl. 260—346.2 R **10 Claims**

1. N-chlorothio carbamates of the formula



wherein R is an organo group of one to 20 carbon atoms and free from non-aromatic unsaturation selected from (1) alkyl, (2) cycloalkyl, (3) phenyl, (4) naphthyl, (5) alkylphenyl, (6) alkylnaphthyl, (7) phenalkyl, (8) naphthalkyl, (9) phenyl, naphthyl, alkylphenyl, alkylnaphthyl, phenylalkyl or naphthalkyl substituted with halogens of atomic number 9 to 35, nitro groups, alkoxy of one to five carbon atoms, alkylthio of one to three carbon atoms or dialkylamino in which the alkyl group contains individually 1 to 3 carbon atoms, and (8) 2,3-dihydro-7-benzofuranyl of the formula



wherein R^2 individually is hydrogen or alkyl of one to six carbon atoms; and R^1 is hydrogen or an alkyl group of one to 10 carbon atoms.

3,843,690

CERTAIN SUBSTITUTED FURFURYLESTERS OF CHRYSANTHEMUMIC ACID

Yoshio Katsuda, Osaka, Japan, assignor to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan

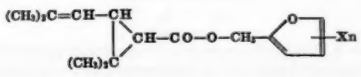
Continuation-in-part of Ser. No. 629,422, April 10, 1967, abandoned. This application Dec. 15, 1970, Ser. No. 98,468

Claims priority, application Japan, Aug. 24, 1966, 41-55930; June 28, 1966, 41-42289

Int. Cl. C07d *5/16*

U.S. Cl. 260—347.4 **8 Claims**

1. A substituted furfurylester of chrysanthemumic acid represented by the following formula:



in which X is a substituent selected from the group consisting of ethoxy, pentaoxy, allyloxy, chloro, bromo and nitro, while *n* is a whole number between 1 and 3 inclusive.

3,843,691

CATALYTIC EPOXIDATION WITH MOLECULAR OXYGEN

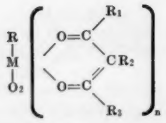
Constantine J. Bouboulis, Union, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 1, 1972, Ser. No. 311,285

Int. Cl. C07d *1/08*

U.S. Cl. 260—348.5 V **11 Claims**

1. A process for preparing an olefin oxide by contacting a monoolefin containing from 3 to 20 carbon atoms in the liquid phase at a temperature of from 70° to 150°C., with molecular oxygen in the presence of a catalytic amount of a transition metal complex of fluorinated diketone, said diketone complex being produced in situ by contacting cobalt neodecanoate with a fluorinated 1,3-diketone in at least a 1:2 mole ratio of cobalt neodecanoate to 1,3-diketone, said diketone complex having the following generic formula:



wherein M is cobalt, R is an anion of neodecanoic acid; R_1 and R_3 are radicals independently selected from the group consisting of fluorinated aliphatic hydrocarbon chains of from 1 to 20 carbon atoms; R_2 is a radical selected from the group consisting of hydrogen, unsubstituted alkyl groups having from 1 to 20 carbon atoms and fluorinated aliphatic hydrocarbon chains of 1 to 20 carbon atoms; n is a number from 1 to less than or equal to 2, said contacting being conducted in the presence of a solvent and thereafter recovering a yield of said olefin oxide.

3,843,692

3-CARBAMOYL-3,4-EPOXYBUTYRIC ACID AND THE ALKALI METAL, ALKALINE EARTH METAL AND AMMONIUM SALTS

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 172,627, Aug. 8, 1971, Pat. No. 3,769,337. This application Apr. 5, 1973, Ser. No. 348,196

Int. Cl. C07d *1/20*

U.S. Cl. 260—348 A **4 Claims**

1. 3-carbamoyl-3,4-epoxybutyric acid and the alkali metal, alkaline earth metal and ammonium salts thereof.

3,843,693

NOVEL OXIRANES AND THEIR PREPARATION

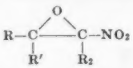
Donald R. Lachowicz, and Kenneth L. Kreuz, both of Fishkill, N.Y., assignors to Texaco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 828,774, May 28, 1969, abandoned. This application Oct. 3, 1973, Ser. No. 402,936

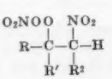
Int. Cl. C07d *1/02, 1/00*

U.S. Cl. 260—348 R **15 Claims**

1. The method of preparing geminal nitroalkyloxiranes included within the formula:



wherein R, R′ and R^2 are selected from the group consisting of hydrogen and alkyl, comprising treating a vicinal nitroalkyl peroxynitrate included within the formula:



wherein R, R′ and R^2 are selected from the group consisting of hydrogen and alkyl radicals, with the proviso that at any given time, either R or R′ are alkyl radicals, with at least a molar equivalent of a strongly alkaline reagent, at reaction temperatures ranging up to about +40°C., until said geminal nitroalkyloxiranes are formed.

3,843,694

CATALYTIC EPOXIDATION OF OLEFINS

George N. Chremos, and Bruno J. Barone, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 19, 1971, Ser. No. 173,307

Int. Cl. C07d *1/08*

U.S. Cl. 260—348.5 L **2 Claims**

1. A process for the preparation of 2,3-epoxy-2-methylbutane comprising contacting 2-methyl butene-2 with an organic hydroperoxide in a mole ratio of 2-methyl butene-2 compound to organic hydroperoxide of from 0.5:1 to 100:1, at a temperature of from about 70° C to about 140° C and a pressure sufficient to maintain said 2-methyl butene-2 and said organic hydroperoxide in liquid phase, said contacting occuring in the presence of a catalyst comprising from about 0.05 to 1.5 weight percent of boron phosphate based on the weight of said 2-methyl butene-2.

3,843,695

ANTHRAQUINONE DYESTUFFS

Arthur Buehler, Rheinfelden; Hans Ulrich Schuetz, Basel, and Gerd Hoelzle, Liestal, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

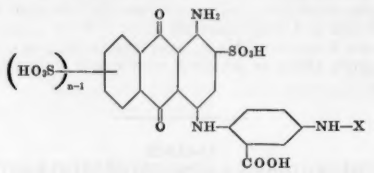
Continuation of Ser. No. 29,659, April 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 659,589, Aug. 10, 1967, abandoned. This application July 25, 1972, Ser. No. 275,027

Claims priority, application Switzerland, Aug. 16, 1966, 11816/66

Int. Cl. C09b *1/40*

U.S. Cl. 260—372 **6 Claims**

1. A dyestuff of the formula



in which *n* is 1 or 2, X is α,β-dibromopropionyl or α-bromoacryl and *n* can be 1 only when X is dibromopropionyl.

3,843,696

METHADONE ANALOG COMPOUNDS

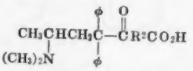
Daniel Wagner, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Sept. 5, 1972, Ser. No. 286,519

Int. Cl. C11c *3/00*

U.S. Cl. 260—404 **4 Claims**

1. A compound of the formula:



wherein R^2 is an alkylene group of from 4 to 8 carbon atoms, there being at least 4 carbon atoms between the two carbonyl groups and φ is phenyl.

3,843,697

PROCESS FOR PRODUCING ESTERS OF MONOHYDRIC ALCOHOLS AND CARBOXYLIC ACIDS BY ESTERIFICATION THEREOF AND REMOVAL OF ACIDIC IMPURITIES FROM THE RESULTING PRODUCT

Gennady Fedorovich Khaidukov, Ulitsa Vyazovskaya, 13, kv. 48; Larisa Vasilievna Zamuraeva, Ulitsa Vyazovskaya, 13, kv. 72; Anatoly Abramovich Kruglikov, Ulitsa Vyazovskaya, 9, kv. 9; Vladimir Petrovich Potapov, Ulitsa Mira, 12, kv. 12; Jury Artemievich Smirnov, Ulitsa Vyiskaya, 23, and Mark Vladimirovich Bronov, Ulitsa Tsiolkovskogo, 11, kv. 18, all of N. Tagil Sverdlovskoi oblasti, U.S.S.R.

Filed Aug. 26, 1971, Ser. No. 175,383

Int. Cl. C07c *67/06*

U.S. Cl. 260—410.9 R **11 Claims**

1. A process for the production of esters from monohydric alcohols containing four to 12 carbon atoms and mono- or

poly- basic carboxylic acids or anhydrides thereof, consisting in the steps of:

a. esterifying said carboxylic acids or anhydrides thereof with said alcohols, the alcohols being used in an amount in excess of the stoichiometric amount with respect to said acids or anhydrides until a level of acids-to-esters conversion of at least 90 is reached;

b. dispersing the resulting esterification product containing impurities of non-esterified acid and acidic ester, when polybasic acid is used, into drops of 1.0–10 mm size in an aqueous caustic alkali solution having a concentration in the range of from 2 to 20 percent by weight, based on the particular acid or anhydride being employed, at a temperature of from 40° to 100°C. said solution being disposed in a layer of a thickness sufficient to complete the diffusion of said impurities from inside of said drops onto the surface of said drops during the time of the ascension of said drops through said layer; said impurities being neutralized on the surface of said drops by the aqueous caustic alkali solution and forming salts which pass into the aqueous caustic alkali layer, and said drops coalescing over said layer of caustic alkali solution and forming a continuous layer of product free from non-esterified acid, acidic ester, when a polybasic acid is used, and salts thereof;

c. removing the remaining alcohol from the product;

d. and discoloring and ensuring the required dielectric properties in the product by distilling or contacting the product with sorbents.

3,843,698

CATALYTIC COMPOUNDS

James H. Dunn, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 819,116, April 24, 1969,. This application Dec. 13, 1971, Ser. No. 207,515

Int. Cl. C07j *5/00*

U.S. Cl. 260—429 R **7 Claims**

1. A catalytic compound adapted to catalyze the selective orthoalkylation of aromatic amines with olefinic hydrocarbons at a high rate and under moderate conditions, said compound being a gallium compound in which at least one aromatic amine is bonded to gallium through an amino nitrogen atom, any remaining gallium valence being substituted with halogen, said aromatic amine bonded to gallium through an amino nitrogen atom being an aromatic hydrocarbyl amine containing only carbon, hydrogen and nitrogen.

3,843,699

PREPARATION OF COMPOSITIONS CONTAINING TRANS-ACID COMPLEXES WITH CHROMIUM (III) NITRATE

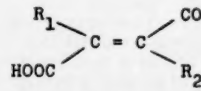
Harry Bowman West, Wilmington, Del., assignor to E. I. du-Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 212,758, Dec. 27, 1971, abandoned. This application June 4, 1973, Ser. No. 366,879

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 R **6 Claims**

1. A process for making a solid, water-soluble composition consisting essentially of a complex of chromium (III) nitrate with a trans-acid having the formula



wherein each of R_1 and R_2 independently is hydrogen, alkyl, phenyl, or the $-CH_2 \cdot COOH$ group;

provided that the maximum number of carbon atoms in the trans-acids is 10; the proportion of the trans-acid is 0.1–0.7 mole per gram-atom of chromium; and there are 1–1.5 gram-equivalents of nitrate ion per gram-atom of chromium;

said composition also containing 0–1.5 moles of a nitrate selected from the group consisting of ammonium, sodium, potassium, and lithium nitrates per gram-atom of chromium;

said process comprising the sequential steps of (a) reacting a solution of chromium (III) nitrate in water with 1–1.5 gram equivalents of at least one base selected from the group consisting of the hydroxides, carbonates and bicarbonates of ammonium, sodium, potassium and lithium, and 0.1–0.7 moles of said trans-acid each per gram-atom of chromium to produce a water solution of a complex, (b) adding a solution in water of said complex with good agitation at 0°–50°C. to acetone, the volume ratio of acetone to the solution being in the range of 10–100:1, and (c) recovering the resulting solid product from the slurry.

3,843,700

ACRYLYLOXYACETYLFERROCENE AND COPOLYMERS THEREOF

Travis E. Stevens, Ambler, and Samuel F. Reed, Jr., Holland, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1973, Ser. No. 321,481

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 CY **5 Claims**

1. Acrylyloxyacetylferrocene.

3,843,701

THE ALUMINUM SALT OF CINNAMOHYDROXAMIC ACID

Joseph S. Wortham, Lake City, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 47,904, June 19, 1970, abandoned. This application Sept. 12, 1972, Ser. No. 288,469

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 R **1 Claim**

1. The aluminum salt of cinnamohydroxamic acid.

3,843,702

PROCESS FOR THE MANUFACTURE OF TRIS-(TRIMETHYLSILOXY)-PHENYLSILANE

Armand de Montigny, Leverkusen, and Werner Buchner, Opladen-Luetzenkirchen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 29, 1973, Ser. No. 410,667

Claims priority, application Germany, Nov. 16, 1972, 2256166

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **3 Claims**

1. In a process for the production of tris-(trimethylsiloxy)-phenylsilane comprising the hydrolysis of a mixture of trimethylmonochlorosilane and monophenyltrichlorosilane with water, said hydrolysis being carried out in the presence of 0.2 to 12 mols of hexamethyldisiloxane per mol of phenyltrichlorosilane, by adding an acid equilibration catalyst to the hexamethyldisiloxane before the beginning of the reaction and stirring this mixture either for 12 to 24 hours at room temperature or a shorter time at an elevated temperature which does not reach the boiling point, employing a molar ratio of trimethylchlorosilane to phenyltrichlorosilane of between 3.3:1 and 4:1 and gradually adding the water until an excess is present and the hydrolysis is complete, the improvement which comprises using as said acid equilibration catalyst an amount, equal to 0.02 to 20 per cent by weight of the hexamethyldisiloxane, of a perfluoroalkanesulphonic acid of the formula $C_nF_{2n+1}SO_3H$ wherein n denotes an integer from 1 to 12.

3,843,703
PROCESS FOR PREPARING SILICON PEROXIDE COMPOUNDS

Robert Leopold Ostrozynski, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,452
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E 12 Claims

1. A process for preparing silicon peroxide compounds which comprises reacting a silazane selected from the class consisting of linear silazanes having the formula

$$R_3Si—NHSiR_2—NHSiR_3$$

wherein R is hydrogen or a monovalent hydrocarbon radical and x has a value of 0 to 100 and cyclic silazane having the formula

$$(R_2SiNH)_n$$

wherein R is the same as defined above and n is an integer of from 3 to 5, with a hydroperoxide compound having the formula R′(OOH) wherein R′ represents a hydrocarbon radical having from one to 30 carbon atoms.

3,843,704
4 AND 3,5 SUBSTITUTED DERIVATIVES OF 1,2—BISTRIHYDROCARBYL-SELOX—1—CYCLOPENTENES

Donald S. Hetzel, New London, Conn., assignor to Pfizer, Inc., New York, N.Y.

Division of Ser. No. 244,940, April 17, 1972,. This application Oct. 3, 1973, Ser. No. 403,030
Int. Cl. C07f 7/18
U.S. Cl. 260—448.8 R 4 Claims

1. A bis-silyl ether selected from 4-substituted and 3,5-disubstituted-1-cyclopentene-1,2-bis-silyl ethers wherein said silyl substituents are each of the formula

wherein R_1, R_2 and R_3 are each fluorine, chlorine, bromine, alkyl of one to six carbon atoms, phenyl, benzyl, tolyl or dimethylaminophenyl, at least one of the said R groups being other than fluorine, bromine and chlorine, and

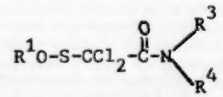
wherein said 4-substituents and said 3,5-disubstituents are alkyl of one to six carbon atoms, alkenyl of two to six carbon atoms or benzyl.

3,843,705
SUBSTITUTED DICHLOROMETHANE SULFENYL ESTERS AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,316
Int. Cl. C07c 145/00
U.S. Cl. 260—456 A 2 Claims

1. A compound of the formula



wherein R^1 is lower alkenyl methylene, R^3 is lower alkyl and R^4 is phenyl or lower alkyl phenyl.

3,843,706
LONG CHAIN ETHER ALCOHOL SULFATES FROM PROPYLENE OXIDE AND 1,2-BUTYLENE OXIDE

James K. Weil, North Wales, and Alexander J. Stirton, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 844,699, May 23, 1969, abandoned, which is a division of Ser. No. 557,375, June 14, 1966, abandoned. This application Dec. 1, 1971, Ser. No. 203,867
Int. Cl. C07c 141/00
U.S. Cl. 260—458 1 Claim

1. A compound of the formula

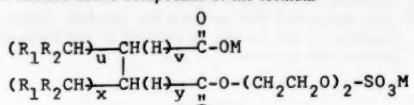
$$n—C_{18}H_{37}[OCH_2CH\ C_2H_5]_2\ OSO_3Na.$$

3,843,707
PHOSPHATE-FREE CARBOXYLATE-SULFATE DETERGENTS

Mitchell Danzik, Pinole, and Ralph House, El Sobrante, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed June 5, 1972, Ser. No. 259,924
Int. Cl. C07c 141/02, 141/10
U.S. Cl. 260—458 3 Claims

1. Surface active compounds of the formula



in which R_1 and R_2 are substantially linear alkyl groups of 3 to 19 carbon atoms, u, v, x and y are 0 or 1, M is an alkali metal, alkaline earth metal, or ammonium cation, the sum of the carbon atoms in R_1 and R_2 is 13 to 21, the sum of u and v is 1, the sum of x and y is 1, and the sum of u and x is 1.

3,843,708
EXTENDED POLYLACTONE DIOL COMPOSITIONS

Markus Matzner, Edison, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 792,125, Jan. 17, 1969, Pat. No. 3,641,200. This application Mar. 24, 1971, Ser. No. 127,819
Int. Cl. C07c 69/00
U.S. Cl. 260—463 2 Claims

1. An extended polylactone diol composition consisting essentially of the reaction product of (1) phosgene, (2) an extending agent having the formula HO—YOH wherein Y is an alkylene group or two or more alkylene groups connected by an ether linkage and (3) a polylactone diol represented by the formula:

$$HO—R'—O—CO\ —CR_2^2)_gO]_nH$$

wherein R′ is a divalent aliphatic hydrocarbon radical or two or more such divalent aliphatic hydrocarbon radicals joined by ether oxygen, R^2 is H or monovalent hydrocarbon free of unsaturation and having 1 to 18 carbon atoms, g is an integer of 5 or 6 and n is an integer so that the molecular weight of the polylactone segment, $[CO—CR_2^2)_gO]_n$, is in the range of 500 to 3,000, said extended diol being a liquid at 25°C and containing hydroxy end groups.

3,843,709
PREPARATION OF CYCLOPROPYL CYANIDE FROM 4-HLOROBUTYRONITRILE

John D. Bacha, and Charles M. Selwitz, both of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 15, 1973, Ser. No. 406,294
Int. Cl. C07c 121/02, 121/46
U.S. Cl. 260—464 10 Claims

1. A method for preparing cyclopropyl cyanide which comprises reacting 4-chlorobutyronitrile with a base selected from

alkali metal hydroxide or lower alkoxide having from one to about four carbon atoms; or calcium, barium or strontium oxide or hydroxide; or magnesium oxide, hydroxide or lower alkoxide having from one to about four carbon atoms; or a mixture thereof in a polar, aprotic solvent at a volume ratio of the polar, aprotic solvent to the 4-chlorobutyronitrile of between about 1:1 and about 100:1, a ratio of the polar, aprotic solvent in liters to the base in mols of between about 0.05:1 and about 20:1, and a molar ratio of the base to the 4-chlorobutyronitrile of between about 0.5:1 and about 2:1; and at a temperature between about 0° and about 160° C.

3,843,710

SUBSTITUTED BETA-ARYLAMIDOACRYLIC ACIDS

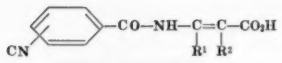
Robert Thomas Buckler, Edwardsburg, Mich., and Harold Eugene Hartzler, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 81,622, Oct. 16, 1970, Pat. No. 3,770,821. This application Feb. 15, 1973, Ser. No. 332,805

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 D **2 Claims**

1. A compound of the formula



wherein:

R^1 is methyl; and

R^2 is hydrogen.

3,843,711

CHEMICAL PROCESS AND COMPOSITIONS

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 172,627, Aug. 18, 1971, Pat. No. 3,769,337. This application Apr. 4, 1973, Ser. No. 347,802

Int. Cl. C07c *121/34, 121/40*

U.S. Cl. 260—465.4 **4 Claims**

1. 3-carbamoyl-3-hydroxy-4-cyanobutyric acid and the alkali metal, alkaline earth metal and ammonium salts thereof.

3,843,712

ENDO-BICYCLO[3.1.0]-HEXANE GLYCOL INTERMEDIATES FOR PREPARING PROSTAGLANDINS E_1, A_1, AND ANALOGS THEREOF

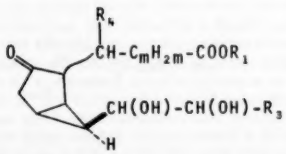
Udo F. Axen, Comstock Twsp., Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 162,289, July 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 748,179, July 29, 1968, abandoned. This application Dec. 20, 1972, Ser. No. 317,096

Int. Cl. C07c *61/36, 64/74*

U.S. Cl. 260—468 G **27 Claims**

1. A compound of the formula:



in endo configuration with respect to the -CH(OH)-CH(OH)-R_3 moiety; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or one, 2, or 3 iodo; wherein R_3 is alkyl of 2 to 8 carbon atoms, inclusive, substituted with zero to 3 fluoro, or alkyl of 2 to 8 carbon atoms, inclusive, substituted with 4 or 5 fluoro on the omega and omega-minus-one carbon atoms; wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_mH_{2m} is alkylene of 3 to 11 carbon atoms, inclusive, substituted with zero to 2 fluoro, with 3 to 7 carbon atoms, inclusive, in a chain between $-CHR_4-$ and $-COOR_1$; and wherein ~ indicates attachment of the $-CHR_4-C_mH_{2m}-COOR_1$ moiety to the ring in alpha or beta configuration.

3,843,713

16-LOWER ALKOXY LOWER ALKYL-16-20 W-PENTANO, PGE

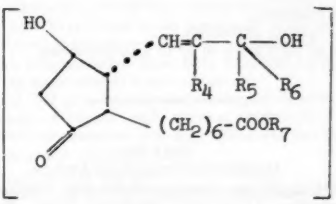
Neville Finch, West Orange, and Isidoros Vlattas, Summit, both of N.J., assignors to CIBA-GEIGY Corporation, Ardsley, N.Y.

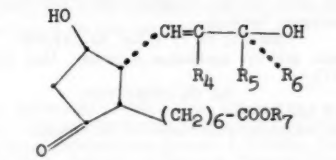
Continuation-in-part of Ser. No. 241,423, April 5, 1972, Pat. No. 3,798,275. This application Dec. 1, 1972, Ser. No. 311,053

Int. Cl. C07c *69/74, 69/36*

U.S. Cl. 260—468 D **3 Claims**

1. The new ketone of the formula





in which each of R_4 and R_5 are hydrogen or lower alkyl, R_6 is mono-lower alkoxy-lower alkyl and R_7 is hydrogen, an alkali metal atom or one equivalent of an alkaline earth metal, lower alkyl, lower alkenyl, lower alkynyl, 3 to 7 ring-membered cycloalkyl, cycloalkenyl, (cycloalkyl or cycloalkenyl)-lower alkyl or Ph-C_nH_{2n}, wherein Ph is phenyl, (lower alkyl)-phenyl, (lower alkoxy)-phenyl, (lower alkylenedioxy)-phenyl, (halogeno)-phenyl, (trifluoromethyl)-phenyl, (nitro)-phenyl or (di-lower alkylamino)-phenyl, and n is an integer from 0 to 4, in which definitions the term "lower" defines the respective organic radicals with up to 4 carbon atoms.

3,843,714
ESTERS OF 2-HALOGEN FLUORENE-9-CARBOXYLIC ACIDS

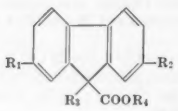
Gerhart Schneider; Sigmund Lust; Konrad Niethammer; Ernst Jacobi; Dietrich Erdmann, and Gunther Mohr, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation-in-part of Ser. No. 817,194, April 17, 1969, Pat. No. 3,598,564, Continuation-in-part of Ser. Nos. 326,186, Nov. 26, 1963, abandoned, and Ser. No. 310,118, Sept. 19, 1963, abandoned, and Ser. No. 736,954, June 14, 1968, Pat. No. 3,506,434, and Ser. No. 508,835, Nov. 19, 1965, Pat. No. 3,476,545. This application Aug. 4, 1971, Ser. No. 169,118
Claims priority, application Germany, Dec. 1, 1962, 5497445

Int. Cl. C07c *69/76*

U.S. Cl. 260—469 **8 Claims**

1. A fluorene-9-carboxylic acid compound of the formula



wherein
R_1 is chlorine
R_2 is hydrogen,
R_3 is hydroxy or chlorine
R_4 is an alkyl group of up to 8 carbon atoms.

3,843,715
AMIDOPHENYLISOTHIOUREAS

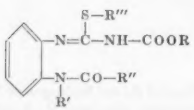
Arno Widdig, Blecher; Engelbert Kuhle, Berg. Gladbach; Hans Scheinpflug, Leverkusen; Ferdinand Grewe, Burscheid; Helmut Kaspers, and Paul Ernst Frohberger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 10, 1971, Ser. No. 141,978
Claims priority, application Germany, May 25, 1970, 2025412

Int. Cl. C07c *159/00*

U.S. Cl. 260—470 **2 Claims**

1. An amidophenylisothiourea of the formula



in which
R is lower alkyl,
R′ is hydrogen,
R″ is phenyl and
R‴ is alkyl of up to 4 carbon atoms.

3,843,716
BIS-OXALIC ACID ESTER AMIDES FOR USE AS STABILISERS

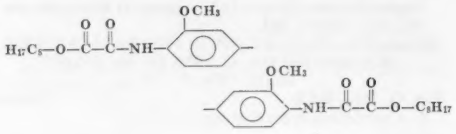
Christian Luethi, Muenchenstein; Hans Rudolf Biland, Gelterkinden, and Max Duennenberger, Frenkendorf, all of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Division of Ser. No. 728,836, May 13, 1968, Pat. No. 3,639,249. This application Sept. 20, 1971, Ser. No. 182,215
Claims priority, application Switzerland, May 16, 1967, 6902/67

Int. Cl. C07c *101/00*

U.S. Cl. 260—471 A **8 Claims**

1. Compound having the formula



3,843,717
DIALKYLAMINOBENZHYDRYLDICARBOXYLATES

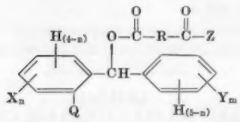
Sidney B. Richter, and David P. Mayer, both of Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 867,891, Oct. 20, 1969, Pat. No. 3,655,731. This application Jan. 5, 1972, Ser. No. 215,668

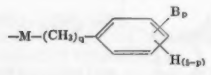
Int. Cl. C07c *103/32*

U.S. Cl. 260—472 **1 Claim**

1. A compound of the formula



wherein X and Y are independently selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkylthio, chlorine, bromine, fluorine, nitro lower chloroalkyl and trifluoromethyl; Q is di-(lower alkyl)amino; R is an alkylene or alkenylene group of up to eight carbon atoms; *m* and *n* are each integers from 0 to 3; and Z is selected from the group consisting of amino, lower alkylamino, di-(lower alkyl-)amino and



wherein M is —NH—; B is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, chlorine, bromine, fluorine, nitro, lower chloroalkyl and trifluoromethyl; and *q* and *p* are integers from 0 to 5.

3,843,718

1,4-BIS-STYRYL-BENZENE-DIOXYALKANOIC ACIDS, SALTS AND ESTERS

Christian Luethi, Muenchenstein, Switzerland, assignor to Giba-Geigy AG, Basle, Switzerland

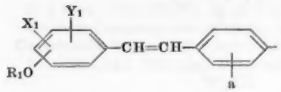
Filed Mar. 1, 1972, Ser. No. 230,931

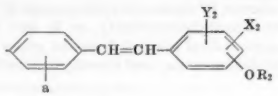
Claims priority, application Switzerland, May 3, 1971, 3235/71; Feb. 3, 1972, 1608/72

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 G 3 Claims

1. A bis-stilbene compound of the formula





where R_1 and R_2 each independently is $(CH_2)_nCOOM$ where n is an integer from 1 to 3 and M is hydrogen, sodium potassium, ammonium or alkyl of 1 to 8 carbon atoms,

a is hydrogen, halogen, or alkyl or alkoxy of one to four carbon atoms,

X_1 and X_2 each independently is hydrogen, alkoxy of one to four carbon atoms, halogen, alkenyl of three to four carbon atoms or alkyl of one to four carbon atoms,

Y_1 and Y_2 each independently is hydrogen, halogen, alkenyl of three to four carbon atoms, or alkyl of one to four carbon atoms,

and provided that the para-positions are free of alkoxy groups or groups R_1O— and R_2O.

3,843,719

SYNTHESIS OF ESTERS

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 824,677, May 14, 1969, abandoned. This application Feb. 28, 1972, Ser. No. 230,037

Int. Cl. C07c *69/78*, *69/80*

U.S. Cl. 260—476 R 12 Claims

1. A process for preparing esters of hydrocarbon carboxylic acids which comprises reacting an alkali metal hydrocarbon carboxylate with at least one monohalide selected from alkyl monohalide and alkenyl monohalides wherein said alkyl and alkenyl radicals contain up to 9 carbon atoms and the alkenyl radical 1 double bond, and said halide is fluorine, chlorine, or bromine, under esterification conditions in the presence of an effective amount of a catalyst which comprises compounds of the formula R_2^2Y wherein Y is sulfur, selenium, or tellurium, and wherein R^2 is a hydrocarbyl radical containing up to 8 carbon atoms and is alkyl, cycloalkyl, aryl, aralkyl, or alkaryl, and a soluble iodide catalyst adjuvant which is at least one of (I) an alkali metal iodide or (II) R^2I other than aryl iodides and tertiary iodides wherein R^2 is as defined above, said catalyst adjuvant having a solubility of at least 0.1 mole per mole of said carboxylate and being present in an amount of about 0.1 to about 50 moles per 100 moles of said carboxylate.

3,843,720

PYROCATECHOL CARBAMATES AND O-MERCAPTOPHENOL CARBAMATES AND THEIR USE FOR COMBATING PESTS

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

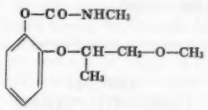
Continuation-in-part of Ser. No. 775,584, Nov. 12, 1968, abandoned. This application July 13, 1971, Ser. No. 162,312

Claims priority, application Switzerland, Nov. 10, 1967, 15746/67

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C 1 Claim

1. The compound of the formula



3,843,721

MANUFACTURE OF VINYL ACETATE

Wilhelm Ester, Herne; Dietrich Schluter, Wanne-Eickel, and Wilhelm Heitmann, Herne, all of Germany, assignors to VEBA-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Filed Sept. 11, 1969, Ser. No. 857,228

Claims priority, application Germany, Sept. 18, 1968, 1793447

Int. Cl. C07c *67/04*, *69/14*

U.S. Cl. 260—497 A 8 Claims

1. In a solution process for the manufacture of vinyl acetate from ethylene, oxygen and liquid acetic acid in the presence of a Cu II-Cu I redox system including a copper salt, acetate ion formers in an amount of from 30 to 50 g/l and a palladium catalyst, the improvement which comprises

a. adding said catalyst to a catalyst support in amounts in the range of 3 to 12 weight per cent wherein the catalyst support is impregnated with a palladium salt and thereafter reduced to palladium and

b. carrying out the reaction

i. at conditions of temperature and pressure to maintain the acetic acid substantially in the liquid phase and

ii. in the presence of an amount of oxygen sufficient to maintain the Cu II salt content constantly at at least 90 percent of the total salt concentration.

3,843,722

ALKYL AMINDOSULFINIC ACID (BIS-ALKYLAMINE) SALTS AND METHOD FOR THEIR PREPARATION

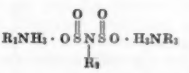
Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 764,949, Oct. 3, 1968, Pat. No. 3,708,526. This application Feb. 14, 1972, Ser. No. 226,290

Int. Cl. C07c *145/00*

U.S. Cl. 260—501.12 18 Claims

1. A composition of the formula



wherein R_1, R_2 and R_3 each is selected from the class consisting of open chain saturated hydrocarbon groups having 1 to 20 C atoms, cycloaliphatic hydrocarbon groups having 5 to 8 ring C atoms, and halogen substituted aliphatic hydrocarbon groups having from 2 to 6 C atoms.

3,843,723

PROCESS FOR THE PRODUCTION OF THIOUREA

Hilde Kersten, Trennfurt, and Gerhard Meyer, Obernburg, both of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Apr. 10, 1972, Ser. No. 242,833

Claims priority, application Germany, Apr. 22, 1971, 2119537

Int. Cl. C07c *157/00*

U.S. Cl. 260—552 R 7 Claims

1. In a process for the catalytic production of thiourea by reacting cyanamide in aqueous solution with hydrogen sulfide at elevated temperature and pressure, the improvement which comprises carrying out said reaction in contact with a bed of active carbon as the catalyst.

3,843,724

CARBAMOYL OXIMES

Karl Gatzi, Basel, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

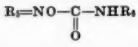
Filed Mar. 15, 1971, Ser. No. 124,527

Claims priority, application Switzerland, Jan. 14, 1971, 4319/70

Int. Cl. C07c *131/02*

U.S. Cl. 260—566 AC 3 Claims

1. A carbamoyloxime of the formula



wherein R_5 is bornylidene or norbornylidene, and R_6 is bornyl or 1,3,3-trimethylnorbornyl --.

3,843,725

4[2-(α-METHYL-PHENETHYLAMINO)-ETHOXY]-BENZENES

Henri Pinhas, Paris, France, assignor to Laboratoires Laroche Navarron, Levallois, France

Filed Dec. 21, 1971, Ser. No. 210,560

Claims priority, application France, Dec. 28, 1970, 70.46877

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 3 Claims

1. 1-[1-ethoxy-propyl]-4-[2-(α-methyl-phenethylamino]-benzene.

3,843,726

2-AMINO-2-BENZYLTHIO-METHYL-1,3-ALKANEDIALS

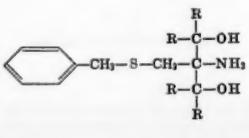
Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 472,733, July 16, 1965, Pat. No. 3,660,488. This application Jan. 3, 1972, Ser. No. 215,193

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.5 S 2 Claims

1. As a composition of matter, a 1,3-propanediol compound of the formula



wherein R is selected from the group consisting of hydrogen and an alkyl radical containing 1-3 carbon atoms.

3,843,727

2-(CYCLOALKYLIDENE-10,11-DIHYDRO-5H-DIBENZO[A,D]CYCLOHEPTENE-2-YLOXY)ALKYLENE AMINES

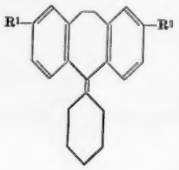
Leslie G. Humber, and Dollard Des Ormeaux, both of Quebec, Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 38,571, May 18, 1970, Pat. No. 3,697,581. This application Apr. 24, 1972, Ser. No. 246,689

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 3 Claims

1. A compound of the formula



wherein R^1 represents hydrogen and R^2 is diethylaminoethoxy or dimethylaminoethoxy, or R^1 and R^2 each represent the same radical selected from the group which consists of diethylaminoethoxy and dimethylaminoethoxy.

3,843,728

RACEMIC-DIKETONE COMPOUNDS

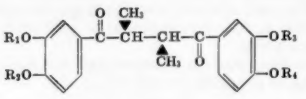
Clark William Perry, Saddle River, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 782,414, Dec. 9, 1968, Pat. No. 3,769,350. This application Jan. 17, 1973, Ser. No. 324,253

Int. Cl. C07c *49/82*

U.S. Cl. 260—590 3 Claims

1. A compound of the formula:



wherein R_1 and R_2 are lower alkyl, and aralkyl, and R_3 and R_4 are lower alkyl, aralkyl, its antipode and racemic mixtures thereof.

3,843,729

PROCESS FOR THE PRODUCTION OF 2,4-DIHYDROXY-BENZOPHENONE

Burkhard Lachmann, and Hans Jurgen Rosenkranz, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 22, 1973, Ser. No. 334,848

Claims priority, application Germany, Feb. 25, 1972, 2208970

Int. Cl. C07c *49/82*

U.S. Cl. 260—591 4 Claims

1. In the process of producing 2,4-dihydroxy-benzophenone by reacting resorcinol with benzotrichloride, the improvement which comprises carrying out said reaction in an organic solvent which is immiscible with water and in the presence of from 1 to 5 mols of a low molecular weight aliphatic alcohol per mol of benzotrichloride, said organic solvent being employed in an amount of from 1 to 10 parts by weight per part by weight of benzotrichloride and being selected from the group consisting of acyclic hydrocarbons having from 5 to 12 carbon atoms; cyclic hydrocarbons having from 5 to 10 carbon atoms; aromatic hydrocarbons; aromatic hydrocarbons

substituted with at least one member selected from the group consisting of alkyl having up to 4 carbon atoms, nitro and halogen; halogenated acyclic hydrocarbons having up to 8 carbon atoms; alkyl acetates having up to 5 carbon atoms in the alkyl moiety and alkyl propionates having up to 5 carbon atoms in the alkyl moiety.

3,843,730

ORTHO-HYDROXY-OMEGA-(METHYLSULFINYL-)ACETONAPHTHONES AND PROCESS FOR PRODUCING SAME

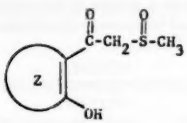
Maximilian Von Strandtmann, Rockaway; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin P. Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 174,947, Aug. 25, 1971, Pat. No. 3,801,644. This application Aug. 27, 1973, Ser. No. 392,152

Int. Cl. C07c *49/82*

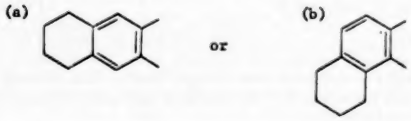
U.S. Cl. 260—592 3 Claims

1. A compound of the formula I:



I

wherein the Z ring has one of the following structures:



3,843,731

PROCESS FOR PREPARING BUTANONE SELECTIVELY MONO- OR DICHLORO-SUBSTITUTED IN 3-POSITION

Volker Frey, Munich, and Bernhard Kreiss, Germering, both of Germany, assignors to Consortium fur Elektrochemische Industrie GmbH, Munich, Germany

Filed May 31, 1972, Ser. No. 258,161

Claims priority, application Germany, June 21, 1971, 2130629

Int. Cl. C07c *45/00, 49/16*

U.S. Cl. 260—593 H 5 Claims

1. Process for the preparation of 3-chlorobutanone(2) by chlorination of butanone(2) comprising treating butanone(2) with hydrogen chloride and a free-oxygen containing gas in the presence of from 10 to 50 mol per cent of copper(I) chloride calculated with respect to the total copper content, and water, there being present 2 mols of hydrogen chloride for each mol of oxygen, at a $[H^+]$ ion concentration between 0 and 0.5 mol/liter, at a temperature between about 50° and about 90°C.

3,843,732

PREPARATION OF CARBONYL COMPOUNDS

Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 21, 1971, Ser. No. 191,473

Int. Cl. C07c *45/04*

U.S. Cl. 260—599 4 Claims

1. A method for the vapor-phase catalytic oxidation of methylated aromatics having the formula $Ar(CH_3)_n$ in which Ar is an aromatic radical having a valence of n containing 6 to 18 carbon atoms, and n is an integer in the range of 1 to 4 contained in a feed stream which comprises contacting said feed stream, air, and steam at an elevated temperature sufficient to maintain the reactants under vapor-phase oxidizing conditions with a lithium-tin-phosphorus-oxygen catalyst consisting essentially of about 0.1 to about 10 weight percent lithium, from about 15 to about 75 weight percent tin, from about 0.1 to about 16 weight percent phosphorus, wherein said amounts of lithium, tin and phosphorus total less than 100 percent, and the balance of said catalyst being combined oxygen in sufficient amount to bring the total catalyst composition to 100 weight percent, to convert said aromatics to aldehydes.

3,843,733

METHOD FOR PRODUCING 2-BUTENE-1,4-DIOL

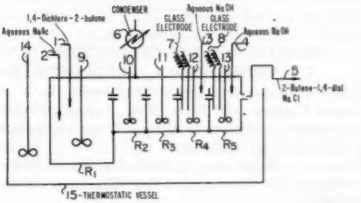
Hisashi Kisaki; Shunsuke Mabuchi, and Yukihiro Tsutsumi, all of Oaza Tonda, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

Continuation of Ser. No. 62,978, Aug. 11, 1970, abandoned. This application Dec. 20, 1972, Ser. No. 317,050

Claims priority, application Japan, Aug. 14, 1969, 44-63839

Int. Cl. C07c *31/18*

U.S. Cl. 260—636 9 Claims



1. In a process for preparing 2-butene-1,4-diol by hydrolysis of a 1,4-dihalo-2-butene selected from the group consisting of 1,4-dichloro-2-butene and 1,4-dibromo-2-butene, the improvement which comprises contacting said 1,4-dihalo-2-butene with water at a temperature of the range of 105°-110°C, in the presence of a water-soluble salt selected from the group consisting of an alkali metal salt and an ammonium salt of acetic acid, propionic acid, oxalic acid or butyric acid and in the presence of an alkaline material selected from the group consisting of sodium hydroxide and ammonia sufficient to maintain the reaction system in the range of pH 3 to pH 11, whereby 2-butene-1,4-diol is formed selectively.

3,843,734

PROCESS FOR PREPARING VINYL CHLORIDE BASED TELOMERS AND COTELOMERS OF LOW MOLECULAR WEIGHT

Emile Trebillon, Neuilly, Seine, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Dec. 22, 1971, Ser. No. 211,061
Claims priority, application France, Dec. 30, 1970, 70.47281
Int. Cl. C07c *17/26*
U.S. Cl. 260—653.1 T 9 Claims

1. A process for the preparation of telomers containing less than 50 taxogens comprising heating a mixture of vinyl chloride and at least one halogenated organic derivative selected from the group consisting of chlorinated, brominated, chlorobrominated, chlorofluorinated, bromofluorinated and chlorobromofluorinated derivatives of methane and ethane and isobutyl bromide in the presence of a metal selected from the group consisting of iron and copper and a polar solvent at least partially miscible with the mixture of the vinyl chloride and the halogenated organic derivative, said solvent being selected from the group consisting of alkanols and acetonitrile.

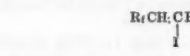
3,843,735

3-PERFLUOROALKYL-1 PROPENES AND PROCESS FOR PRODUCING

Martin Knell, 4 Possum Rd., Ossining, N.Y. 10562, and Neal O. Brace, 1202 Howard Cle., Wheaton, Ill. 60187

Filed Sept. 1, 1971, Ser. No. 177,091
Int. Cl. C07c *17/00, 21/18*
U.S. Cl. 260—653.3 5 Claims

1. A process for the preparation of 3-perfluoroalkyl-1-propene which comprises treating



where R_f is C_nF_{2n+1}
n is an integer from 3 to 14
and R is lower alkyl, lower carboxylacyl, benzoyl or aryl, with zinc in the presence of an alkanol of one to three carbon atoms, a glycol of up to three carbon atoms, ethylene glycol or diethylene glycol.

3,843,736

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE FROM 1,2-DICHLOROETHANE

Gerhard Rechmeier; Armin Jacobowsky, both of Knapsack near Cologne, and Peter Wirtz, Cologne-Lindenthal, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Koln, Germany

Filed Mar. 2, 1970, Ser. No. 15,650
Claims priority, application Germany, Mar. 4, 1969. 1910854
Int. Cl. C07c *21/02*
U.S. Cl. 260—656 R 1 Claim

1. A process for the production of vinyl chloride by incomplete thermal cracking of 1,2-dichloroethane at elevated pressure and at temperatures between about 450° and 650°C, in the absence of catalysts, in which the gas mixture which leaves the cracking zone, and which consists of vinyl chloride, hydrogen chloride, unreacted 1,2-dichloroethane, and also by-products, is partly condensed in a cooling zone and the resulting gases and condensate is passed into a first distillation stage for distilling off the hydrogen chloride; and the sump product from said first distillation stage is passed to a second distillation stage for distilling off the vinyl chloride, whereupon the sump product of the second distillation stage is distilled to recover unreacted 1,2-dichloroethane for recycle to said cracking zone; and wherein the vinyl chloride drawn off at the top of the second distillation stage is condensed; collecting said condensed vinyl chloride product from the top of the second distillation stage, said vinyl chloride containing hydrogen chloride, feeding said vinyl chloride product to a degasification zone, heating the vinyl chloride in the zone to evaporate from 3 to 20 percent of the vinyl chloride product in the zone and the entrained hydrogen chloride, condensing said evaporated vinyl chloride and hydrogen chloride and returning the condensate to the first distillation stage, and discharging from the bottom of the degasification zone purified vinyl chloride free of hydrogen chloride.

3,843,737

ADIABATIC RECYCLE DESIGN FOR EXOTHERMIC HETEROGENEOUSLY CATALYZED REACTIONS

Victor M. Chong, Media, Pa., assignor to Sun Ventures Inc., St. Davids, Pa. and Teijin Limited, Tokyo, Japan

Filed Oct. 31, 1973, Ser. No. 411,536
Int. Cl. C07c *15/20*
U.S. Cl. 260—668 F 7 Claims

1. Method of preparing 1,5-dimethyltetralin (1,5-DMT) which comprises feeding 5-o-tolylpentene-2 into a fixed bed reactor containing an acidic cyclization catalyst at a temperature effective to cyclize the 5-o-tolylpentene-2 to 1,5-DMT, withdrawing reaction product containing 1,5-DMT from the reactor, cooling at least a portion of the withdrawn product, and recycling at least a portion of the cooled product to the reactor in an amount sufficient to control the reactor temperature at below 600°F.

3,843,738

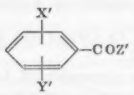
PRODUCTION OF CYCLODODECATRIENE

Hiroyuki Morikawa; Noriyoshi Tamura; Takahiro Sato; Kazuo Yamagishi, and Takeo Nagai, all of Ami-machi, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 314,228
Claims priority, application Japan, Dec. 15, 1971, 46-101064; Dec. 15, 1971, 46-101065; Aug. 4, 1972, 47-78138
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 B 12 Claims

1. A process for producing cyclododecatriene-(1,5,9) which comprises contacting a B-B fraction, obtained by the cracking of naphtha and containing from 25 to 90 percent by weight of butadiene, with a Ziegler catalyst, thus resulting in cyclic trimerization of the butadiene, said catalyst comprising a combination of:

1. a titanium compound selected from the group consisting of titanium compounds of the formulae TiX_nY_{4-n} and $TiOZ_2$, wherein X is halogen, Y is alkoxy, chloroalkoxy, acetylacetonato or acetoacetato, Z is X or Y and n is zero or an integer of from 1 to 4,
2. a compound selected from the group consisting of
   a. five-membered heterocyclic compounds containing oxygen or nitrogen, the mole ratio of the heterocyclic compound to the titanium compound being from 0.15 to 1.5,
   b. benzene derivatives of the formula



wherein each of X′ and Y′ is hydrogen, hydroxyl, alkyl, alkoxy, halogen, nitro, amino, monoalkylamino, dialkylamino,

aminoaklyl, an aldehyde group, a carboxylic acid group or an esterified derivative thereof and Z′ is hydrogen, halogen, amino, monoalkylamino or dialkylamino, the mole ratio of the benzene derivative to the titanium compound being from 0.15 to 1.5, and

c. cyclic compounds of the formula

$$\left[(CR_2X'')_{n'}\right]$$

wherein X″ is oxygen or sulfur, R is hydrogen or alkyl and n' is an integer of 3 or 4, the mole ratio of the cyclic compound to the titanium compound being from 0.15 to 1.5,

3. a compound selected from the group consisting of sulfur compounds, phosphorus compounds and mixtures thereof, said sulfur compounds and said phosphorus compounds being those of the formulae SO_n R'_2 and $PX'''_mY'''_m$, respectively, wherein R′ is alkyl, aryl, alkoxy, aryloxy or the two R′ groups are fused with each other to form, together with the sulfur atom, a ring containing the sulfur atom and an alkylene or alkenylene group, X‴ is alkyl, aryl, alkoxy, aryloxy or two X‴ groups are fused with each other to form, together with the phosphorus atom, a ring containing the phosphorus atom and an alkylene or alkenylene group, Y‴ is oxygen or halogen, n″ is an integer of 1 or 2, m is an integer of from 1 to 3, and m' is zero or 1 and
4. an aluminum compound of the formula AlR''_2Cl, wherein R″ is alkyl or aryl.

3,843,739
PROCESS FOR TRANSALKYLATING DIETHYL BENZENE

Earl F. Harper, Oakmont, and Roger C. Williamson, Allison Park, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 132,887, April 9, 1971, Pat. No. 3,769,360. This application May 16, 1973, Ser. No. 360,680The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T **10 Claims**

1. A process for preparing ethyl benzene which consists essentially in subjecting benzene to alkylation with ethylene to obtain an alkylation product containing unreacted benzene, diethyl benzene and polyalkyl benzenes and then subjecting said alkylation product, while maintaining the benzene therein in the vapor phase, to contact with a zeolitic molecular sieve having a pore size large enough to permit the internal absorption of benzene, a silica to alumina molar ratio of at least about 3.0 and no more than 90 percent of aluminum atoms associated with monovalent cations, at a temperature of about 100° to about 500° C. and a pressure of about 5 to about 500 pounds per square inch gauge.

3,843,740
PRODUCTION OF AROMATICS

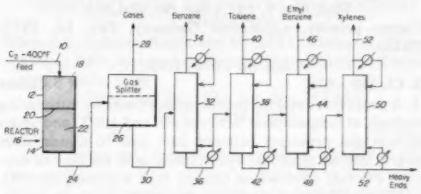
Thomas Owen Mitchell, West Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 308,392, Nov. 21, 1972, abandoned. This application Nov. 14, 1973, Ser. No. 415,702

Int. Cl. C07c *3/20, 5/24*

U.S. Cl. 260—673 **9 Claims**

1. In a process of aromatizing a feed hydrocarbon comprising at least one C_2^{--} to 400°F. component to a product comprising a liquid which is predominantly aromatic, and gas by contacting such feed in a reaction zone with a ZSM–5 type synthetic aluminosilicate molecular sieve catalyst at about 800° to 1500°F., a pressure of about 1 to 35 atmospheres absolute and a space velocity equivalent to about 1 to 15 WHSV in the absence of added hydrogen under such combination of conditions as to convert at least 90 percent of the aromatizable feed to a product in a yield of at least 30 grams of aromatics per 100 grams of non-aromatics in the feed; the improvement, whereby increasing the proportion of aromatics in said liquid product, which comprises utilizing as the catalyst



in said reaction zone a first, upstream catalyst comprising a ZSM–5 type of synthetic aluminosilicate molecular sieve zeolite and a second, downstream catalyst comprising a mixture of a ZSM–5 type of synthetic aluminosilicate molecular sieve zeolite and a second molecular sieve zeolite having pore size of about 4.5 to 6.7A.

3,843,741
AROMATIZATION PROCESS AND CATALYST THEREFOR

Tsoung-Yuan Yan, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 31, 1973, Ser. No. 384,317

Int. Cl. C07c *3/02*

U.S. Cl. 260—673.5 **10 Claims**

1. In the process of converting an aliphatic feedstock having an atmospheric boiling point of up to about 400°F to aromatic hydrocarbons by contacting such feedstock with a ZSM-5 type of zeolite at about 500° to 1500°F and a space velocity of up to about 15 WHSV; the improvement, whereby inhibiting the formation of coke on said catalyst and improving the steam stability of the said catalyst, comprising using as said catalyst a matrix of ZSM-5 type of crystalline zeolite and a second, inorganic component consisting essentially of at least about 80 weight percent silica.

3,843,742
PROCESS FOR PREPARING ISOPRENE TRIMER

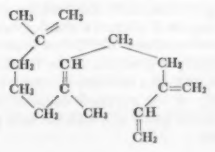
Misao Yagi, Kanagawa; Toshiaki Sakaguchi, Tokyo; Susumu Akutagama, Tokyo, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 404,050

Int. Cl. C07c *11/16*

U.S. Cl. 260—677 R **9 Claims**

1. A process for preparing an isoprene trimer having the general formula (I) comprising trimerizing isoprene using a catalyst system obtained by reducing a nickel compound wherein said nickel compound is selected from the group consisting of a nickel salt of an organic acid; a nickel halide; a nickel-chelate compound; and a non-valent nickel complex with an organic aluminum compound consisting of a trialkyl aluminium compound in the presence of a ligand selected from the group consisting of an acetylene compound, an organic arsenic compound, an organic antimony compound, a phosphorus compound, an isonitrile compound and an isocyanate compound,:



(I)

3,843,743

PRODUCTION OF MONOVINYLACETYLENE

Alexander Ohorodnik, Erftstadt Liblar; Klaus Gehrmann, Hurth-Knapsack; Gunter Legutke, Bruhl, and Hermann Vierling, Hurth, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Oct. 9, 1973, Ser. No. 404,393

Claims priority, application Germany, Oct. 14, 1972, 2250463

Int. Cl. C07c 11/22

U.S. Cl. 260—678 3 Claims

1. A process for making monovinylacetylene by introducing acetylene, at temperatures between 40° and 100°C and under acetylene gas pressures between 0.01 and 10 atmospheres (gauge), into an aqueous, hydrochloric acid solution of copper (I) chloride (Nieuwland catalyst type solution), comprising adding to the catalyst solution an organic monovinylacetylene-solvent boiling at temperatures higher than substantially 150°C, being immiscible with the said solution and containing at least 40 weight percent of indan together with further mononuclear aromates; mechanically dispersing the said catalyst solution and the said solvent by introducing acetylene thereinto so as to obtain a homogeneous catalyst liquid having between 25 and 85 weight percent by volume of the solvent therein; continually stripping off monovinylacetylene from the dispersed solvent, which is saturated with monovinylacetylene, by introducing an excess of acetylene gas thereinto; and recovering pure monovinylacetylene from the issuing gas mixture.

3,843,744

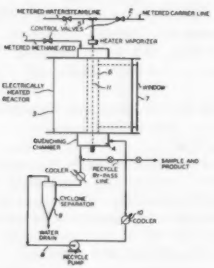
CONTROLLING COKE IN THE PYROLYSIS OF HYDROCARBONS TO ACETYLENE AND HYDROGEN

Leonard Kramer, 2031 Central Rd., Fort Lee, N.J. 07024, and John Happel, 69 Tompkins Ave., Hastings-on-Hudson, N.Y. 10706

Filed Feb. 14, 1972, Ser. No. 225,719

Int. Cl. C07c 5/18

U.S. Cl. 260—679 R 13 Claims



1. A process for the control of coke produced in hydrocarbon pyrolysis reactors wherein hydrocarbons undergo pyrolysis to acetylene containing pyrolysis products, by injection of a supplementary gas stream selected from the group consisting of hydrogen, steam and mixtures thereof, said gas stream being at a temperature above 750°C. but lower than the temperature of the pyrolysis products at the location of injection into the reactor system at a location downstream from that at which substantially all the pyrolysis reaction has been completed but prior to the point at which the said pyrolysis products are quenched.

3,843,745

OXIDATIVE DEHYDROGENATION PROCESS CATALYZED BY MAGNESIUM FERRITE

Harold F. Christman, Seabrook, and Paul H. Teel, Pasadena, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 11,289, Feb. 3, 1970, abandoned. This application May 16, 1972, Ser. No. 253,820

Int. Cl. C07c 5/18

U.S. Cl. 260—680 E 9 Claims

1. In a process for the vapor phase oxidative dehydrogenation of acyclic non-quarternary hydrocarbons having 4 to 5 contiguous carbon atoms and having at least one

grouping or ethyl benzene to produce a corresponding hydrocarbon having a higher degree of unsaturation with a magnesium ferrite catalyst wherein the improvement comprises using as the magnesium ferrite catalyst a magnesium ferrite prepared by preparing a solution of soluble metal components of iron and magnesium, adding 0.1 to 4 weight percent of a soluble polyhydric organic compound based on the weight of metal to said solution said polyhydric compound having number average molecular weight of about 3,000 to 400,000 and further being selected from the group consisting of polyesters derived from polybasic carboxylic acids and polyols; polyethers being the condensation products of ethylene oxide, propylene oxide and mixtures thereof with polyols; polysaccharides and mixtures thereof, contacting said solution of soluble metal components and polyhydric organic compound with a precipitating agent at a temperature in the range of 20° to 100° C. and at a pressure of 0.5 to 50 atmospheres to precipitate insoluble metal component of iron and magnesium, recovering a gelatinous material, and heating said gelatinous material to form magnesium ferrite.

3,843,746

ISOMERIZATION OF C_{10}-C_{14} HYDROCARBONS WITH FLUORIDED METAL-ALUMINA CATALYST

Stanley Kravitz, Wiccopee; John H. Estes, and Robert M. Suggitt, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 48,899, June 25, 1970, Pat. No. 3,692,697. This application Jan. 26, 1972, Ser. No. 221,025

Int. Cl. C07c 5/30

U.S. Cl. 260—683.68 10 Claims

1. An isomerization process which comprises contacting a feedstock containing C_{10} to C_{14} hydrocarbons at a temperature of from 200° to 1,000°F in the presence of hydrogen with a catalyst comprising a hydrogenating component, alumina and from about 0.5 to 15.0 weight percent fluorine, said catalyst prepared or regenerated by contacting alumina having associated therewith a hydrogenating component selected from the group consisting of the metals, oxides, sulfides and salts of the metals of Groups VIB, VIIB and VIII of the Periodic Table and mixtures thereof with a combination of hydrogen and a fluoride compound selected from the group consisting of sulfuryl fluoride and thionyl fluoride at a temperature of from about 200° to 1,200°F.

3,843,747

ISOMERIZATION OF C_{10}–C_{14} HYDROCARBONS WITH FLUORIDED METAL-ALUMINA CATALYST

Stanley Kravitz, Wiccopee; John H. Estes, and Robert M. Suggitt, both of Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.

Division of Ser. No. 49,896, June 25, 1970, Pat. No. 3,692,694. This application Feb. 2, 1972, Ser. No. 223,031

Int. Cl. C07c 5/30

U.S. Cl. 260—683.68 10 Claims

1. An isomerization process which comprises contacting a feedstock containing C_{10} to C_{14} hydrocarbons at a temperature of from 200° to 1,000°F in the presence of hydrogen with a catalyst comprising a hydrogenating component, alumina and from about 0.5 to 15.0 weight percent fluorine, said catalyst prepared or regenerated by contacting alumina having associated therewith a hydrogenating component selected from the group consisting of the metals, oxides, sulfides and salts of the metals of Groups VIB, VIIB and VIII of the Periodic Table and mixtures thereof, with a combination of carbon monoxide and a fluoride compound selected from the group consisting of sulfuryl fluoride and thionyl fluoride at a temperature of from about 200° to 1,200°F.

3,843,748

ISOMERIZATION OF C_{10}–C_{14} HYDROCARBONS WITH FLUORIDED METAL-ALUMINA CATALYST

Robert M. Suggitt; John H. Ester, both of Wappingers Falls, and Stanley Kravitz, Wiccipee, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 60,954, June 25, 1970, Pat. No. 3,711,425. This application Feb. 4, 1972, Ser. No. 223,764

Int. Cl. C07c 5/30

U.S. Cl. 260—683.68 10 Claims

1. An isomerization process which comprises contacting a feedstock containing C_{10}–C_{14} hydrocarbons at a temperature of from 200 to 1000°F in the presence of hydrogen with a catalyst comprising a hydrogenating component, alumina and about 0.5 to 15.0 weight percent fluorine, said catalyst prepared or regenerated by contacting alumina having associated therewith a hydrogenating component selected from the group consisting of the metals, oxides, sulfides and salts of the metals of Groups VIB and VIII of the Periodic Table and mixtures thereof, with a combination of oxygen and an organic fluoride compound containing from 2 to 16 carbon atoms corresponding to the formula $C_nF_aH_bX_c$ where X is nitrogen or oxygen and where n is 2 to 16, a is 1 to $2n + m$, b is 0 to $2n + m - 1$ and c is 1, where m is equal to 2 when X is oxygen and m is equal to 3 when X is nitrogen, at a temperature of from about 450 to 900°F, where said oxygen is present in an amount of at least one and up to 50 gram moles of oxygen per gram atom of carbon in said organic fluoride compound.

3,843,749

METHOD OF MANUFACTURING ACRYLONITRILE POLYMER

Hitoshi Tamura, Otake, Japan, assignor to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed June 12, 1973, Ser. No. 369,293

Claims priority, application Japan, Nov. 9, 1972, 47-112410

Int. Cl. C08f 3/76, 15/02, 15/22

U.S. Cl. 260—78.5 R 9 Claims

1. In the method of manufacturing acrylonitrile polymers having an excellent whiteness and thermal stability by polymerizing, in an aqueous medium, acrylonitrile or a mixture of at least 85 percent by weight of acrylonitrile and the balance of at least one ethylenically unsaturated monomer capable of copolymerizing with acrylonitrile in the presence of a catalyst comprising nitrous acid or its salt and a water-soluble sulfoxy reducing compound, the improvement which comprises conducting the polymerization in the presence of at least 10^2 p.p.m. of a chelating agent selected from the group consisting of ethylenediamine tetraacetic acid, nitrilotriacetic acid, 1,2-cyclohexanediamine tetracetic acid, diethylenetriamine pentaacetic acid and water soluble salts thereof.

3,843,750

THERMOPLASTIC INGREDIENT FOR MOLDING COMPOUNDS

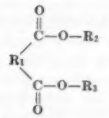
Michael G. Roberts, Heath, and Michael L. Matuszak, Newark, both of Ohio, assignors to Owens-Illinois Fiberglas Corporation, Toledo, Ohio

Filed May 18, 1973, Ser. No. 361,663

Int. Cl. C08f 47/08

U.S. Cl. 260—862 12 Claims

1. An improved thermosetting molding compound of the type containing a resin mixture of from 50 to 95 percent by weight of a thermosetting matrix resin forming prepolymer, from 5 to 50 percent by weight of a thermoplastic resin filler, and 0 to 45 percent by weight of an unsaturated common solvent for the thermosetting prepolymer and thermoplastic resin and which solvent crosslinks the thermosetting prepolymer during cure to release the thermoplastic resin as a filler, the improvement being that said thermoplastic resin filler is a heteropolymer of a mixture of alkene radical containing monomers which include from approximately 5% by weight to approximately 95 percent by weight of a material having the formula:



wherein: R_1 is a chlorinated or brominated divalent organo radical devoid of ethylenic unsaturation, R_2 is a saturated monovalent organo radical or substituted organo radical, and R_3 is an alkene radical or substituted alkene radical.

3,843,751

LOW VISCOSITY PULVERULENT THERMOSETTING RESINOUS COMPOSITION

Johannes Reese, Wiesbaden-Biebrich, and Hermann Hotze, Auringen, both of Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Continuation-in-part of Ser. No. 19,464, March 13, 1970, Pat. No. 3,723,572. This application Dec. 8, 1972, Ser. No. 313,551

Claims priority, application Germany, Mar. 19, 1969, 1913923; Feb. 11, 1970, 2006128

Int. Cl. C08g 39/06, 39/10

U.S. Cl. 260—862 10 Claims

1. A thermosetting resinous composition comprising a low viscosity pulverulent mixture of a synthetic resin component A containing free hydroxyl groups and a synthetic resin component B containing free carboxyl groups wherein one of said resin components is a copolymer I selected from the group consisting of

IA. a copolymer containing free hydroxyl groups and based on at least one hydroxyalkylester of an unsaturated at most dicarboxylic acid of 3 to 4 carbon atoms and at least one other copolymerisable monomer selected from the group consisting of styrene, ethylene and esters, nitriles and amides of acrylic acid and methacrylic acid,

IB. a copolymer containing free carboxyl groups based on at least one olefinically unsaturated at most dicarboxylic acid of 3 to 5 carbon atoms and at least one other copolymerisable monomer being free from hydroxyl groups selected from the group consisting of styrene, ethylene and esters, nitriles and amides of acrylic acid and methacrylic acid,

and the other resin component II is selected from the group consisting of

IIA. that of said copolymers not yet present,

IIB. a polyester containing free hydroxyl groups and based on at least one dicarboxylic acid of 4 to 12 carbon atoms and at least one compound selected from the group consisting of an alcohol of 3 to 12 carbon atoms being at least trihydric and a combination of said at least trihydric alcohol with at least one dihydric alcohol of 2 to 18 carbon atoms,

IIC. a combination of component IA with component IIB,

IID. a polyester containing free carboxyl groups and based on at least one polycarboxylic acid of 4 to 24 carbon atoms and at least one dihydric alcohol of 2 to 24 carbon atoms,

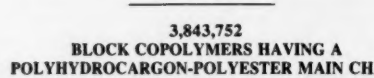
IIE. a combination of component IB with component IID the component IA, IIB and IIC having a hydroxyl number between 100 and 450.

3,843,752
BLOCK COPOLYMERS HAVING A POLYHYDROCARGON-POLYESTER MAIN CHAIN

Shitomi Katayama; Hideichi Horikawa, both of Akita, and Noboru Masuda, Kawaguchi, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1972, Ser. No. 243,826
Claims priority, application Japan, Apr. 13, 1971, 46-23348
Int. Cl. C08g *39/10*
U.S. Cl. 260—873 **16 Claims**

1. A block copolymer comprising a plurality of repeating units of the formula



in which:

R, R′, R″ and R‴ are independently H or a member selected from the group consisting of alkyl radicals having up to 8 carbon atoms, aralkyl radicals having up to 10 carbon atoms, aryl radicals having up to 10 carbon atoms, alkoxy radicals having up to 8 carbon atoms;

R, R′, R″ and R‴ also collectively represent a 3–7 atom residue of a carbon ring structure which may contain up to two hetero oxygen atoms;

R_2 is a member selected from the group consisting of alkylene radicals having from 2–12 carbon atoms and arylene radicals having from 6–12 carbon atoms;

Z is a member selected from the group consisting of -R_1OCOR_2- and R_4;

R_1 is an alkylene radical having from 2–12 carbon atoms;

R_4 is a member selected from the group consisting of alkylene radicals having from 5–16 carbon atoms and arylene radicals having from 6–12 carbon atoms;

n is an integer having a value of from 1 to 500; and p and q represent the relative molar ratio of each unit and are defined by the formula $(p/[p+q]) + (q/[p+q]) = 1$.

3,843,753
COMPOSITE INTERPOLYMER AND LOW HAZE IMPACT RESISTANT THERMOPLASTIC COMPOSITIONS THEREOF

Frederick Hammann Owens, Willingboro, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 224,912, Feb. 9, 1972, Pat. No. 3,808,180, which is a continuation of Ser. No. 27,996, April 13, 1970, abandoned. This application Sept. 4, 1973, Ser. No. 393,850
Int. Cl. C09f *9/24, 29/50*
U.S. Cl. 260—876 R **10 Claims**

1. A thermoformable composition comprising a blend of a rigid thermoplastic polymer and a composite interpolymer comprising (a) a first, elastomeric phase having a glass transition temperature of less than 10°C. polymerized from a monomer mix comprising at least about 50 weight percent of a member selected from the group consisting of alkyl and aralkyl acrylate and mixture thereof, about 0.05 to 5.0 weight percent of cross-linking monomer, about 0.05 to 5.0 weight percent of graft-linking monomer, about 0 to 10.0 weight percent hydrophilic monomer, and the balance other copolymerizable ethylenically unsaturated monomer; and further characterized in that the initial monomer mixture of said phase has present at least one member selected from the group consisting of alkyl and aralkyl acrylate and mixtures thereof, a cross-linking monomer and a graft-linking monomer, said cross-linking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction and wherein said graft-linking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; (b) a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase from a monomer mix comprising at least about 50 weight percent alkyl methacrylate, wherein said elastomeric phase and said thermoplastic phase have a minimum chemical attachment level of about 20 percent.

3,843,754
PLASTIC CONTAINER

Jules Pinsky, West Hartford, and Morris Salame, Windsor, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

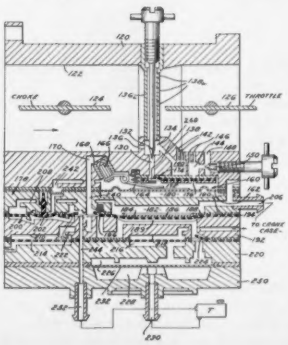
Filed Jan. 2, 1969, Ser. No. 788,623
Int. Cl. C08f *29/22, 15/08*
U.S. Cl. 260—890 **1 Claim**

1. A bottle for holding environmentally sensitive products having a sidewall thickness of between 0.01 inch and 0.20 inch, said bottle being formed of a plastic comprising an interpolymer of 60 to 70 percent by weight of vinylidene chloride, 40 to 30 percent by weight of butadiene, and 0 to 10 percent by weight of a polymer compatible with said vinylidene chloride and butadiene, said vinylidene chloride and butadiene cooperating to provide a steam sterilizable bottle with improved toughness as characterized by an EMFH at 73°F. of at least 8 feet and improved resistance to oxygen permeability of not more than 7.0 cc/day/100 sq.in./mil-atm. at 73°F.

3,843,755
CARBURETOR WITH CHECK VALVE BYPASS

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Mar. 29, 1973, Ser. No. 345,841
Int. Cl. F02m *17/04*
U.S. Cl. 261—69 A **1 Claim**



1. In a carburetor having a diaphragm control fuel inlet valve leading to a diaphragm chamber in which there is a fuel

chamber above the diaphragm from which fuel is fed to a mixing passage through a manually regulated orifice to a main jet passage and through supplemental jet passages for idling, that improvement which comprises, in combination:

a. a check valve independent of the diaphragm leading from said fuel chamber to said main jet passage for unidirectional flow from said chamber to said passage, and

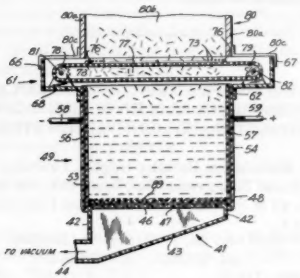
b. a means forming a bypass passageway independent of said manually regulated orifice and around said check valve to connect said fuel chamber to said main jet passage, said passageway being calibrated to allow fuel to return directly from said main jet passage to said fuel chamber when said check valve is closed.

3,843,756

METHOD FOR FORMING BOARDS FROM PARTICLES

John W. Talbott, and James D. Logan, both of Moscow, Idaho, assignors to Berol Corporation, Danbury, Conn.

Filed June 2, 1972, Ser. No. 259,099
Int. Cl. B29j *5/00*
U.S. Cl. 264—24 **2 Claims**



1. The method of producing a fiberboard comprising:

a. mixing a dry, powdered, thermo-setting polymeric bonding agent homogeneously with a multiplicity of elongated cellulosic fibers having a directional grain and a long axis in the direction of said grain, said fibers having a moisture content from about 9 to 15 percent on a dry weight basis;

b. depositing said mixture into a vertically oriented deckle box having said walls, an upper entrance and a lower exit, said mixture being deposited through said upper entrance to cause said mixture to fall vertically downwardly through said box toward said exit;

c. establishing between a pair of opposing side walls within said box, at an intensity of from about 1500 to 3750 volts per inch a horizontally directed electrical field to cause the fibers descending within said box to become oriented with said long axis aligned with the direction of said field, said field having alternating polarity to prevent movement of said fibers toward said walls and separation of said fibers from said bonding agent;

d. collecting said mixture of oriented fibers and bonding agent on an air pervious screen disposed beneath said exit of said deckle box, said screen having a partial vacuum therebeneath to form on said screen a mat of said fibers and bonding agent, said mat being retained in position by said partial vacuum;

e. removing said mat from said screen; and,

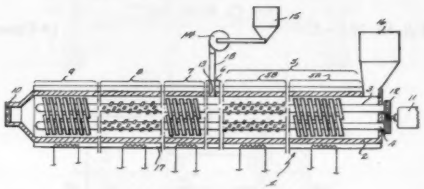
f. subjecting said mat to heat and pressure to consolidate said mat, activate said bonding agent, and bond said fibers into a fiberboard.

3,843,757

PROCESS FOR EXTRUDING FOAMED THERMOPLASTICS BY UTILIZING AN INTERMESHING CO-ROTATING TWIN SCREW EXTRUDER

Herbert A. Ehrenfreund, and Edward W. Cronin, both of Wilmington, Del., assignors to Hercules Incorporated, New Castle County, Del.

Filed Nov. 15, 1967, Ser. No. 683,388
Int. Cl. B29d *27/00;* **B29f** *3/02*
U.S. Cl. 264—53 **5 Claims**



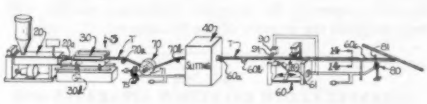
1. In a process for extruding a thermoplastic polymer comprising extruding a foamable thermoplastic polymer on an extruder while injecting a blowing agent into the extruder, uniformly distributing the injected blowing agent into the polymer, and adding heat to said polymer, the improvement comprising passing said polymer during extrusion between intermeshing screw flights of a twin screw intermeshing corotating extruder while limiting the amount of heat added to the polymer during extrusion so that the cooling effect of the blowing agent when injected into the extruder and uniformly distributed within the polymer, will bring the polymer and blowing agent mixture to substantially the discharge temperature.

3,843,758

METHOD FOR MAKING AND SLITTING PLASTIC CORRUGATED TUBES

Ernest Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc., Roseboro, N.C.

Filed July 13, 1972, Ser. No. 271,226
Int. Cl. B29c *17/07, 17/10, 17/15*
U.S. Cl. 264—40 **15 Claims**



1. A method of making a plastic corrugated tube and forming slits therein which comprises the steps of extruding a tube of hot plastic material into a blow molding zone defined by a series of cooperating pairs of forwardly moving die blocks, while molding annular corrugations of alternating ribs and valleys on the tube during forward movement of the tube through the molding zone and while delivering the corrugated tube from the molding zone at a predetermined speed, feeding the corrugated tube delivered from the molding zone through a slitting station by meshingly engaging the corrugations of the tube with a plurality of forwardly moving teeth with successive teeth entering successive valleys and pushing forwardly against the respective ribs of the corrugated tube, sensing variations in tension in the corrugated tube between the blow molding zone and said feeding and in response thereto varying the rate of movement of the forwardly moving teeth to vary the rate of feed of the tube of substantially accord with the rate of delivery of the tube from the molding zone, cutting slits through certain valleys of the tube being fed as it passes

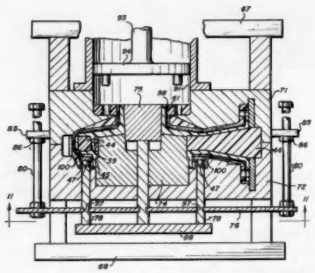
through the slitting station, directing the slit tube from the slitting station through a cutting station, and cutting the tube into predetermined lengths as it passes through the cutting station.

3,843,759

METHOD FOR PRODUCING A REINFORCED RESINOUS HOUSING

Donald J. Keeham, 31012 Huntington Woods Pky., Bay Village, Ohio 44140

Filed Jan. 5, 1970, Ser. No. 712
Int. Cl. B29d *3/02*
U.S. Cl. 264—135 **19 Claims**



1. The method of making an irregularly shaped, reinforced resinous pump or valve housing having high strength and a high resistance to corrosive fluids including the steps of forming an initial housing from a resin which initial housing has an internal portion and an exterior with the exterior of the initial housing being in unfinished form and having a tensioning member located contiguous to the exterior of the said initial housing and movable relative thereto which tensioning member has wall means for receiving and securing portions of an elongated reinforcing member, wrapping an elongated reinforcing member about the exterior of the initial housing to cover at least a portion thereof and securing separated portions of the reinforcing member to the wall means, exerting a force on the tensioning member to move same relative to the housing to tension the wrapped reinforcing member, and thereafter covering the wrapped reinforcing member with a resin to finish the exterior of the housing.

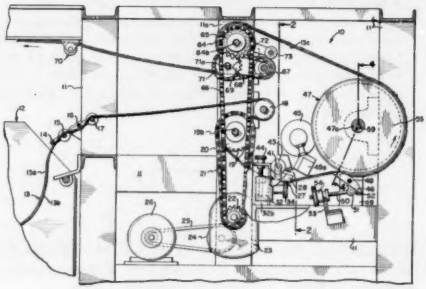
3,843,760

CHANNEL CLOTH EXTRUSION APPARATUS AND PROCESS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Wave Shoals, S.C.

Filed Apr. 4, 1972, Ser. No. 241,062
Int. Cl. B29f *3/10*
U.S. Cl. 264—171 **9 Claims**

1. An apparatus for extruding a thin layer of plastic material and the like on the back of a base strip of channel cloth having a plurality of parallel rows of weatherstripping pile projecting from the opposite side thereof comprising: a first roller including means on the surface thereof for positively gripping said base strip while permitting said rows of pile to project freely without crushing the pile; means for guiding channel cloth to said first roller, a second roller including means on the surface thereof for positively gripping said base strip while permitting said rows of pile to project freely without crushing the pile; means for driving said first and second rollers at different speeds to stretch the channel cloth therebetween sufficient to cause alignment of said pile in straight parallel rows and to maintain said base strip in a flattened condition; means for extruding a thin film of plastic material upon the back of said base strip while the channel cloth is in a stretched condition; means for substantially solidifying said plastic material while said cloth is in a stretched condition; and means for guiding



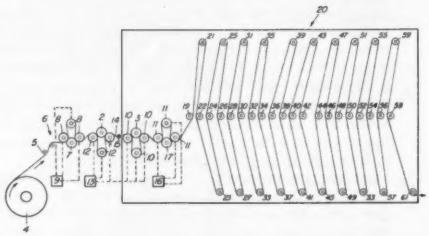
said cloth to said solidifying means while pressing said base strip against a surface of said solidifying means to maintain the thickness of said plastic material backing within predetermined dimensional ranges.

3,843,761

PROCESS FOR PREPARING A THERMOPLASTIC MICROPOROUS FILM INVOLVING A COLD STRETCHING STEP AND MULTIPLE HOT STRETCHING STEPS

Harvey S. Bierenbaum, Berkeley Heights; Lawrence R. Daley, Dover; Daniel Zimmerman, East Brunswick, and Ian L. Hay, Summit, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,365
Int. Cl. B29d *7/24, 27/00*
U.S. Cl. 264—210 R **13 Claims**



1. A process for the preparation of an open-celled microporous polymer film which comprises:

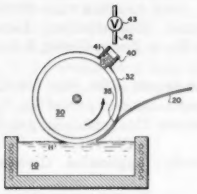
uniaxially cold stretching a non-porous, crystalline, elastic film at a temperature in the range of between about −20° C. and a temperature 20° C. below the crystalline melting point of the polymeric film; and

sequentially hot stretching in the same direction the cold stretched film in a plurality of discrete stretching steps at a temperature in the range of between about 20° C. below the crystalline melting point and 5° C. below the crystalline melting point.

3,843,762
METHOD OF MAKING FILAMENT

Gordon Sleigh, 95 Meriton Rd., Handforth, Wilmslow, England

Filed May 30, 1973, Ser. No. 365,083
Int. Cl. B22d *13/00*; D01d *5/00*
U.S. Cl. 264—213 **6 Claims**



1. In a method of forming filamentary material from a source of molten material having properties in the molten state substantially similar to molten metals by rotating the circumferential edge of a disk-like heat-extracting member in contact with the surface of said molten material while limiting the area of contact of said edge with said surface, solidifying said material in solid filamentary form on said edge and spontaneously releasing the filament from said edge the improvement comprising:

applying a film of cooling liquid externally to said edge at a point between the location of spontaneous filament release and the point where said edge enters the surface of said molten material.

3,843,763
EMBOSSING ROLLERS AND METHOD OF EMBOSSING

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 858,136, Sept. 15, 1969, abandoned. This application Mar. 9, 1971, Ser. No. 122,507
Int. Cl. B29c *1/02*; B28b *11/08*; C23b *5/56*
U.S. Cl. 264—219 **6 Claims**

1. In the method of embossing a vinyl substrate material to reproduce a fine or textured pattern thereon, the improvement which comprises contacting said vinyl substrate with a master embossing surface which has been subjected to the following succession of steps:

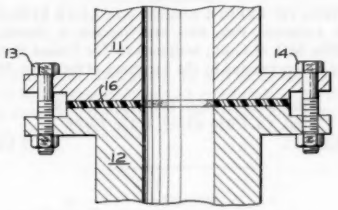
a. Electroplating the surface with a brightening metal having a high to medium levelling effect selected from the group consisting of copper, iron, and nickel followed by b. electroplating with a metal having a relatively lower levelling effect selected from the group consisting of chromium and nickel with the proviso that the metal of step (b) has a relatively lower levelling effect than the metal of step (a).

3,843,764
METHOD OF MAKING A NON-CURING GASKET FOR OPPOSED SURFACES

Charles E. Grawey, Peoria, Ill., and Kenneth D. Probert, Phoenix, Ariz., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 41,703, May 26, 1970, abandoned, which is a continuation of Ser. No. 775,692, Nov. 14, 1968, abandoned. This application Sept. 23, 1971, Ser. No. 183,208
Int. Cl. B29b *3/02*; B29c *3/00*; C09k *3/10*
U.S. Cl. 264—330 **4 Claims**

1. The method of making a high temperature non-curing gasket for opposed surfaces comprising applying to at least one of the surfaces a solution of a polysiloxane gum, selected from the group consisting of polymers of dimethyl vinyl siloxane, dimethyl siloxane, diphenyl siloxane, methyl phenyl siloxane, and phenyl vinyl siloxane, said gum having a molecular

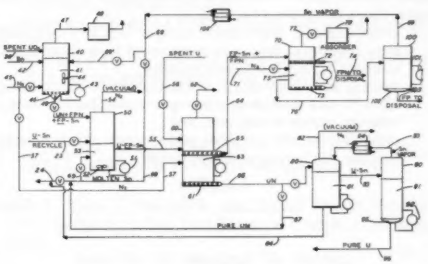


weight of at least about 100,000, dissolved in an organic solvent therefor, removing said solvent by evaporation, and placing said opposing surfaces in opposed relationship, wherein said gum remains uncured.

3,843,765
ACTINIDE NITRIDE-FUELED REACTOR AND CONTINUOUS METHOD OF OPERATING THE SAME

Robert N. Anderson, Palo Alto, and Norman A. Parlee, Los Altos Hills, both of Calif., assignors to Parlee Anderson Corporation, San Mateo County, Calif.

Filed May 19, 1969, Ser. No. 825,651
Int. Cl. C01g *43/00*; G21c *19/28*
U.S. Cl. 423—11 **4 Claims**



1. The process of removing metal fission product contaminants from spent actinide fuel, comprising the steps of

a. adding the spent actinide fuel to an excess of molten tin solvent, said spent actinide fuel being in a form selected from the group consisting of oxide, nitride, sulfide, carbide, and silicide, and forming a solution of the spent actinide fuel in the tin solvent;

b. treating the solution formed in step (a) with an atmosphere of gaseous nitrogen at a nitrogen pressure ranging from about 0.02 to about 2 atmospheres at temperatures ranging from 300°C to 2,000°C in a vessel in a manner that the fuel actinide is precipitated from the molten tin phase and settles to the bottom of the vessel in the form of solid actinide nitride while leaving metal fission product contaminants in the molten tin phase, said treated solution being contained by a vessel formed of a refrac-

tory material inert to said treated solution at the treatment conditions, and

c. separating the precipitated actinide nitride phase from the residual molten tin phase.

3,843,766

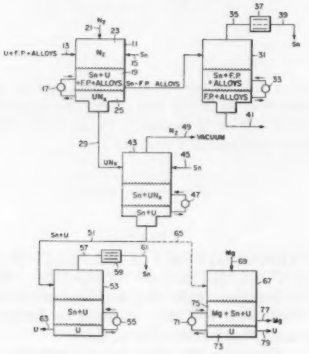
METHOD OF REPROCESSING NUCLEAR FUELS

Robert N. Anderson, Palo Alto, and Norman A. Parlee, Los Altos Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1969, Ser. No. 883,498

Int. Cl. C01g *43/00;* **G21c** *19/28*

U.S. Cl. 423—11 **7 Claims**



1. The method of separating uranium metal from spent metal nuclear fuels including uranium, fission products and metal alloys comprising the steps of:

a. dissolving said spent metal nuclear fuel in a relatively large quantity of tin at a temperature of from about 500°C to about 1,500°C to form a solution;

b. heating at a temperature of from about 500°C to about 1,500°C said solution in a nitrogen atmosphere to form a uranium nitride precipitate; and

c. removing the nitrogen from said uranium nitride precipitate thereby leaving uranium metal.

3,843,767

PROCESS FOR TREATING FLUOPHOSPHATE ORES

Carl Raymond Faust, and Paul Clifford Yates, both of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1972, Ser. No. 238,478

Int. Cl. C22b *29/00;* **C01b** *25/22*

U.S. Cl. 423—167 **2 Claims**

1. In the process for recovering the calcium, fluorine, and phosphate values of calcium fluorphosphate ores by acid attack followed by separation of the impurities and recovery of the desired fluorine, phosphate and calcium values, the improvement comprising dissolving no more than about 45 parts by weight of said ore per 100 parts by weight acid, based on P_2O_5, in 10 to 60 percent by weight aqueous phosphoric acid, based on P_2O_5, the phosphoric acid containing no more than 0.3 percent by weight fluorine and no more than 30 percent of the equilibrium solubility of $CaSO_4$ at the acid strength employed, at a temperature of from 50° to 120° C. for a time varying from 3 hours at 50° C. and 5 minutes at 120° C., said time being sufficient to dissolve about 75 percent of the fluorine and phosphate values but insufficient to react any appreciable amount of the fluoride liberated with the silica in said ore.

3,843,768

PROCESS FOR THE PREPARATION OF SODIUM CARBONATE MONOHYDRATE FROM A SODIUM HYDROXIDE SOLUTION PRODUCED ACCORDING TO THE DIAPHRAGM PROCESS

Ulrich Neumann, Rodenkirchen, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co., KG, Cologne, Germany

Continuation-in-part of Ser. Nos. 226,024, Feb. 14, 1972, which is a continuation-in-part of Ser. No. 268,854, July 3, 1972, abandoned. This application July 25, 1972, Ser. No. 274,991

Claims priority, application Germany, June 2, 1971, 2132922

Int. Cl. C01d *7/00, 7/26, 7/34*

U.S. Cl. 423—190 **13 Claims**

1. In a process for the production of sodium carbonate monohydrate from a sodium hydroxide solution formed by the diaphragm process by evaporation of the sodium hydroxide solution down to an NaOH concentration of from 45 to 55 wt % NaOH, leaving residual NaCl contaminant dissolved in the evaporatively concentrated sodium hydroxide solution, separation of the thus-precipitated NaCl, carbonation of the evaporatively concentrated sodium hydroxide solution with a carbon dioxide containing gas at a temperature between 70° and 110° C, to form sodium carbonate monohydrate and simultaneously evaporating water, separation of the sodium carbonate monohydrate formed from the mother liquor and recycling of a part of the mother liquor to the cabonation stage, the improvement which comprises:

a. establishing and maintaining a steady state NaCl concentration of about 13–20 weight percent in the liquid phase of the carbonation mixture by continuously separating a sufficient portion of said clarified mother liquor from the recycle stream;

b. separating particulate monohydrate from inorganic sodium salt contaminants remaining in a solution phase of the evaporation mixture; and

c. washing separated monohydrate to remove the inorganic sodium salt contaminant-containing solution adhering thereto with water optionally containing soda.

3,843,769

PROCESS FOR REMOVING HEXAVALENT CHROMIUM FROM CHLORATE CONTAINING LIQUORS

Harold deVere Partridge, Wilson, and Joseph M. Hildyard, Youngstown, both of N.Y., assignors to Hooker Chemical Corporation, Niagra Falls, N.Y.

Continuation-in-part of Ser. No. 219,375, Jan. 20, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,963

Int. Cl. C01b *11/00, 11/14*

U.S. Cl. 423—475 **11 Claims**

1. A process for removing hexavalent chromium values from alkaline aqueous solutions of alkali metal chlorates which comprises the steps of

1. treating a concentrated aqueous solution of an alkali metal chlorate having a pH above about 8 with at least about 3 molar proportions of a water soluble sulfide per molar proportion of hexavalent chromium compound present,

2. neutralizing the resultant solution to a pH of about 4 to about 5 thereby precipitating trivalent chromium as an insoluble product, and

3. separating the insoluble trivalent chromium product from said solution.

3,843,770

PREPARING CHLORINE PENTAFLUORIDE

Claude Merrill, Midland, Mich., assignor to The Dow Company, Midland, Mich.

Filed Oct. 3, 1966, Ser. No. 584,016
Int. Cl. C01b 7/24
U.S. Cl. 423—489 2 Claims

1. A process for preparing chlorine pentafluoride which comprises;

a. providing a reaction mixture of chlorine trifluoride and oxygen difluoride, said mixture comprising ClF_3/OF_2 in molar proportions ranging from about 10/1 to 0.1/1,

b. reacting said mixture at a temperature of from about 80° to about 300° C. at a pressure of at least about 1 atmosphere for a period of from about 30 minutes to about 6 hours, and

c. recovering chlorine pentafluoride.

3,843,771

METHOD FOR SUPPRESSING SULFATE MAKE IN A SO SCRUBBING STEP

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 9,968, Feb. 9, 1970, Pat. No. 3,644,087. This application Feb. 14, 1972, Ser. No. 226,018
Int. Cl. C01b 17/64
U.S. Cl. 423—514 20 Claims

1. In a process for the removal of SO_2 from an input gas stream containing SO_2 and O_2, wherein the input gas stream is contacted, in a gas-liquid scrubbing zone, with an aqueous scrubbing solution containing an alkaline reagent at scrubbing conditions selected to form a treated gas stream containing substantially less SO_2 than the input gas stream and a rich scrubbing solution containing a water-soluble sulfite compound and wherein at least a portion of the oxygen present in the input gas stream reacts with a portion of the resulting sulfite compound to form an undesired, intractable sulfate by-product, the improvement comprising; adding to the scrubbing zone a reducing agent, selected from the group consisting of finely divided sulfur, a polysulfide compound, water-soluble sulfide compound and mixtures thereof, said finely divided sulfur being added in an amount of from about .05 to about 0.95 atoms of sulfur per molecule of absorbed SO_2, said polysulfide compound being added in an amount of about .05 to about .95 moles of polysulfide per 6 moles of absorbed SO_2, and said water-soluble sulfide being added in an amount of from about .025 to about 0.495 moles of sulfide per mole of absorbed SO_2 and thereafter, operating the scrubbing zone under thiosulfate production conditions selected to react the reducing agent with a portion of the water-soluble sulfite compound as it is formed to produce the corresponding thiosulfate compound, thereby suppressing the production of undesired sulfate by-products.

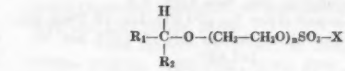
3,843,772

PRODUCTION OF WHITE POTASSIUM SULFATE CRYSTALS

Albert F. Boeglin, Carlsbad, N. Mex., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed Sept. 14, 1972, Ser. No. 288,901
Int. Cl. C01d 5/00, 11/02, 11/04
U.S. Cl. 423—551 9 Claims

1. In a process for the production of potassium sulfate by the reaction of potassium chloride with a solid complex salt containing magnesium-potassium sulfate, in aqueous medium, the improvement comprising carrying out the reaction in the presence of at least 250 parts per million of a material of the formula:



wherein R_1 is an alkyl group, R_2 is H or an alkyl group, with R_1 and R_2 together containing 8 to 18 carbon atoms; n is any whole number in the range of 1 to 12; and X is H, K, Na, Mg^+, NH_4 or triethanol amine.

3,843,773

PROCESS FOR PRODUCING FINE ACICULAR GAMMA FERRIC OXIDE CRYSTALS

Bernard-Jean Pingaud, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 36,385, May 11, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,318
Int. Cl. C01g 49/06
U.S. Cl. 423—634 9 Claims

1. A process for preparing fine acicular crystals of gamma ferric oxide for magnetic recording comprising

reacting under non-oxidizing conditions, at a temperature below 60°C, an aqueous solution of a ferrous salt with an aqueous solution of a stoichiometric excess of an alkaline hydroxide to form an aqueous dispersion of ferrous hydroxide particles;

introducing oxygen into said dispersion at a temperature of 20°–60°C for a period of time sufficient to convert said ferrous hydroxide particles to crystals of alpha FeO·OH, the concentration of ferrous salt in said aqueous solution being such that the concentration of said alpha FeO·OH formed in said dispersion is less than 15 grams per liter; discontinuing introduction of said oxygen;

boiling said dispersion to obtain further crystallization of said alpha FeO·OH crystals;

recovering said alpha FeO·OH crystals from said dispersion; and

subjecting said crystals to dehydration, reduction and oxidation to form gamma ferric oxide crystals.

3,843,774

PREPARATION OF NON-SOLVATED ALUMINUM HYDRIDE

Buddy L. York, Akron, Mich., and Kazuji Terada, Boulder, Colo., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 15, 1965, Ser. No. 507,964
Int. Cl. C01b 6/00
U.S. Cl. 423—645 2 Claims

1. A process for preparing crystalline, substantially non-solvated aluminum hydride which comprises,

a. dissolving aluminum chloride in diethyl ether and recovering aluminum chloride·monodiethyl etherate from the resulting ethereal solution,

b. reacting said aluminum chloride-monodiethyl etherate with a light metal hydride thereby preparing an aluminum hydride·aluminum chloride·diethyl ether complex,

c. reacting said aluminum hydride·aluminum chloride·diethyl ether complex in the liquid state with lithium aluminum hydride thereby to prepare an ethereal product solution containing aluminum hydride-diethyl ether solvate,

d. separating said product solution from co-produced solid by-products, and

e. recovering a solid, crystalline, substantially non-solvated aluminum hydride from said ethereal product solution.

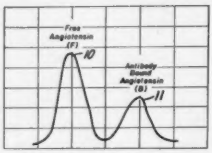
3,843,775
RADIOIMMUNOASSAY OF ANGIOTENSIN AND RENIN ACTIVITY

Robert L. Wolf, New York, N.Y., assignor to Mount Sinai Research Foundation, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 699,098, Jan. 19, 1968, Pat. No. 3,592,888. This application July 12, 1971, Ser. No. 161,697

Int. Cl. A61k *27/04*; G01n *23/00*

U.S. Cl. 424—1 6 Claims



1. A process for assaying angiotensin activity in a material comprising the steps of:

1. preparing mixtures of (i) antibody to angiotensin coupled to poly-L-lysine, (ii) angiotensin labeled with a radioactive isotope, and (iii) varying known amounts of unlabeled angiotensin,
2. incubating the mixtures to form antibody-bound radioactive angiotensin complexes and antibody-bound unlabeled angiotensin complexes and increase the quantity of radioactive free angiotensin present in the mixtures,
3. mixing the mixtures with a suspension of charcoal powder coated with dextran to cause the free angiotensin to react with the charcoal powder,
4. precipitating the charcoal powder from the suspension to separate the free angiotensin from the antibody-bound angiotensin complexes,
5. counting the radioactivity of the supernatant fluid and of the charcoal powder residue to determine the ratios of the radioactivity of antibody-bound angiotensin to the radioactivity of free angiotensin,
6. referencing the ratios of bound to free radioactive angiotensin to the known amounts of angiotensin in said mixtures to establish a relationship between the ratio of bound to free angiotensin and the concentration of angiotensin,
7. repeating steps (1) to (5) using a solution of the material to be assayed containing an unknown amount of unlabeled angiotensin in place of the known amounts of unlabeled angiotensin to determine the ratio of radioactive bound angiotensin to radioactive free angiotensin for the material, and
8. comparing the ratio determined according to step (7) with the relationship previously established according to step (6) to determine the concentration of angiotensin in the material being assayed.

3,843,776
DIAGNOSTIC METHOD AND MEANS THEREFOR

Carl Gustaf Kamme, Lund, Sweden, assignor to Aktiebolaget Leo (A/B Leo), Halsingborg, Sweden

Filed May 6, 1971, Ser. No. 141,026

Int. Cl. G01n *31/00*

U.S. Cl. 424—12 9 Claims

1. A method in which erythrocytes bearing phages derived from bacteria are produced which comprises contacting erythrocytes with an aqueous C_1 to C_5 aliphatic aldehyde solution, contacting the resulting aldehyde-treated erythrocytes with Staphylococcal bacteriophages at a temperature of about 45° C to about 60° C for a period of time sufficient to adhere said phages to said erythrocytes, and then contacting the phage-bearing erythrocytes with an aqueous C_1 to C_5 aliphatic aldehyde solution at a temperature of about 35° C to about 60° C for a period of time sufficient to fix said phages to said erythrocytes.

3,843,777
HEMOLYTIC ASSAY SYSTEM

Martha B. Hainski, Glendale, and Guido A. Ordonez, Los Angeles, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 848,338, Aug. 7, 1969, abandoned. This application Aug. 10, 1972, Ser. No. 279,611

Int. Cl. G01n *31/00*, *33/16*

U.S. Cl. 424—13 1 Claim

1. A diagnostic method for the determination of the presence of antibodies to Kolmer antigen in blood serum comprising admixing (A) about one part by volume of guinea pig complement reconstituted in Kolmer saline with (B) about one part by volume of Kolmer antigen and (C) about one part by volume of blood serum and then (D) reacting the resulting mixture for a predetermined period of time with hemolysin-sensitized erythrocytes homogeneously dispersed in a semi-solid gel medium containing from about 0.1 to about 5 percent by weight agar on a plate by allowing said mixture to come into contact with said hemolysin-sensitized erythrocytes by radial diffusion from a well in the surface of said gel during incubation at about 37°C for a predetermined period of time, said hemolysin-sensitized erythrocytes comprising (E) about one part by volume sheep cell hemolysin in about 10 to 100 parts by volume Kolmer saline admixed with (F) about one part by volume sheep erythrocytes dispersed at a concentration of about 1 to 5 percent Kolmer saline, said Kolmer saline comprising aqueous NaCl, $MgCl_2.6H_2O$ and $CaCl_2.2H_2O$.

3,843,778
ANTACIDS

Julius Diamond, Lafayette Hill; Robert S. Joslin, and John D. Buehler, both of Fort Washington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 32,730, April 28, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,580

Int. Cl. A61k *27/00*

U.S. Cl. 424—38 10 Claims

1. A process for preparing improved antacid particles wherein the wet antacid material is selected from the group consisting of

aluminum hydroxide,
aluminum hydroxycarbonate,
aluminum magnesium glycinate,
calcium carbonate,
dihydroxy aluminum aminoacetate,
magnesium aluminate,
magnesium carbonate,
magnesium hydroxide,
magnesium oxide and
magnesium trisilicate

said antacid particles having a size between 0.5–300 microns and being coated thereon with a non-toxic, inert, substantially water-insoluble oil coating, said oil being selected from the group consisting of

almond oil,
coconut oil,
corn oil,
cottonseed oil,
refined linseed oil,
light liquid petrolatum,

heavy liquid petrolatum,
olein,
olive oil,
palm oil,
peanut oil,
persic oil,
sesame oil,
soybean oil and
safflower oil;

the proportion of oil coating on said antacid particles being between 1:50 and 1:1000 by weight of oil to wet antacid; the process of which comprises dispersing an electronegatively charged powder selected from the group consisting of

an alkyl aryl sulfonate,
an alkyl sulfate,
a sulfonated amide or amine,
a sulfated or sulfonated ester or ether,
an alkyl sulfonate,
a dioctyl sulfosuccinate,
a hydrated aluminum silicate,
a silica pigment and
a microfine silica

in said oil in an amount sufficient to charge the oil dispersion intimately contacting the said dispersion with said wet antacid and agitating vigorously to obtain a homogeneous mixture of all the materials present.

3,843,779

PROCESS FOR PREPARING STABLE DENTIFRICE

James Norfleet, Plainfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 127,051, March 22, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,667

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **14 Claims**

1. A process for preparing a dentifrice stable against precipitation and floculation comprising adding to a blend of about 0.2–10% by weight of alkali metal carboxyalkyl cellulose, a humectant and water, a water-soluble surface active agent and a water-soluble non-toxic acid addition salt of 1,6-di-(p-chlorophenyl biguanido) hexane in about 0.01–5% by weight of the free base thereof, said acid addition salt being added to said blend (after the addition of) in aqueous solution no sooner than said surface-active agent (or simultaneously with the addition of said surface-active agent), and also mixing with these components a dentally-acceptable water-insoluble polishing material; said percentages being based on said dentifrice composition.

3,843,780

COSMETIC COMPOSITION CONTAINING MINERAL OIL

Edwin B. Michaels, and James J. Michaels, both of Gregory Ct., East Norwalk, Conn. 06855

Continuation-in-part of Ser. No. 644,477, June 8, 1967, abandoned. This application July 3, 1972, Ser. No. 268,447

Int. Cl. A61k *7/14*

U.S. Cl. 424—73 **8 Claims**

1. A homogeneous, single-phase, clear, liquid, composite solution adapted for application to skin prior to shaving or removal of paint from skin which consists essentially of:

a. 75 to 85%, by weight of mineral oil having a viscosity between about 25 to 85 seconds Saybolt, and

b. 15 to 25%, by weight of an anhydrous, monohydric, alkanol selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, n-butanol and t-butanol.

3,843,781

SMELL-SWEETENING AND DEODORIZING MALEIMIDES

Fumiya Masuda; Meiken Nakajima, both of Ichikawa, and Yukio Oyamada, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

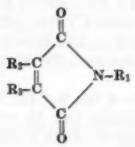
Filed June 19, 1972, Ser. No. 264,266

Claims priority, application Japan, June 21, 1971, 46-44726; Dec. 28, 1971, 46-2775

Int. Cl. A61l *13/00*

U.S. Cl. 424—76 **2 Claims**

1. A method for deodorizing and sweetening the smell of odoriferous materials and objects characterized by having mercaptans and hydrogen sulfide as a bad-smelling component, which comprises applying to said material or object an effective deodorizing amount of a compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen, alkyl, having one to 12 carbon atoms, hydroxymethyl, 2-hydroxyethyl, carboxymethyl, 2-aminoethyl, phenyl, alkyl substituted phenyl wherein the alkyl has one to three carbon atoms, anilino and phenylhydrazo;

R_2 and R_3 each is selected from the group consisting of hydrogen, halogen, alkyl having one to 12 carbon atoms, hydroxymethyl, 2-hydroxyethyl, carboxymethyl, 2-aminoethyl, phenyl, alkyl substituted phenyl wherein the alkyl has one to three carbon atoms, anilino and phenylhydrazo;

in an amount sufficient to substantially reduce the mercaptan and hydrogen sulfide content of the odoriferous material or object.

3,843,782

EYE SOLUTION AND METHOD OF USING SAME

Joseph Z. Krezanoski, and John C. Petricciani, both of Los Altos, Calif., assignors to Flow Pharmaceuticals, Inc., Palo Alto, Calif.

Filed July 26, 1971, Ser. No. 166,286The portion of the term of this patent subsequent to Dec. 22, 1988, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 **2 Claims**

1. An aqueous eye wash solution containing:

a. a water soluble cellulosic polymer selected from the group consisting of hydroxyethyl cellulose, methyl cellulose, hydroxypropyl cellulose and carboxymethyl cellulose in amount sufficient to give the solution a viscosity in the range 15 to 750 cps at 25°C;

b. a quantity of sodium chloride, potassium chloride or mixtures of sodium chloride and potassium chloride sufficient to make the solution hypertonic relative to a sodium chloride solution containing 0.9% by weight of sodium chloride but not hypertonic relative to 1.8 wt. % sodium;

c. from 0.001 to 0.2% of a preservative agent selected from the group consisting of benzalkonium chloride and chlorhexidine;

d. sodium bicarbonate in amount sufficient to give the solution a pH in the range 7.1 to 9.5; and

e. about 0.125% by weight based on the total composition of polyvinyl alcohol.

3,843,783

RODENTICIDAL COMPOSITIONS AND PROCESSES EMPLOYING GELATINIZED AMYLACEOUS MATERIALS

Stanley N. Burlow, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Nov. 8, 1971, Ser. No. 196,738
Int. Cl. A01n *17/14*
U.S. Cl. 424—84 11 Claims

1. A water-resistant rodenticide composition comprising a gelatinized, compacted amylaceous material consisting of ground cereal grain having a water content of from about 5 to about 12 percent by weight based on the total composition in admixture with a rodenticidal amount of a rodenticide.

3,843,784

ANTIBIOTICS A201A AND A201B AND PROCESS FOR THE PRODUCTION THEREOF

Robert L. Hamill, New Ross, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 101,377, Dec. 24, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 188,058
Int. Cl. A61k *21/00*
U.S. Cl. 424—119 3 Claims

1. The antibiotic substance A-201A, a white crystalline compound soluble in alcohols, acetone, chloroform and ethyl acetate and insoluble in water, hydrocarbons, and ether; melting at about 170°-72°C.; having an composition of 55.20 percent carbon, 6.72 percent hydrogen, 10.45 percent nitrogen, and 28.05 percent oxygen; has an apparent molecular weight determined by mass spectroscopy of 693; having an ultraviolet absorption maximum at about 208 mμ., with an extinction coefficient, $E_{1cm.}^{1\%}$ of 535, and an absorption maximum at about 275 mμ., with an extinction coefficient, $E_{1cm.}^{1\%}$ of 490; and having the following distinguishable bands in the infrared absorption spectrum when dissolved in chloroform: 2.96 (broad), 3.45, 3.53, 5.89, 6.06, 6.26, 6.33, 6.40, 6.67, 6.92, 7.06, 7.15, 7.28, 7.46, 7.60, 7.76, 7.92, 8.10, 8.30, 8.60, 8.87, 9.06, 9.14, 9.32, 9.54, 9.65, 10.12, 10.23, 10.59, 11.01, 11.30, 11.60, and 12.00 microns.

3,843,785

METHOD OF TREATING PROSTATIC HYPERTROPHY WITH LEVARIN

Harry W. Gordon, Bronx, N.Y., assignor to Schmid Laboratories, Inc., Little Falls, N.J.

Division of Ser. No. 194,052, Oct. 29, 1971, , Division of Ser. No. 70,509, Sept. 8, 1970, , Continuation of Ser. No. 623,847, March 17, 1967, Pat. No. 3,584,118, Continuation-in-part of Ser. No. 544,712, April 25, 1966, abandoned. This application Dec. 8, 1972, Ser. No. 313,568
Int. Cl. H61k *21/00*
U.S. Cl. 424—120 4 Claims

1. A process for the treatment of prostatic hypertrophy in a large mammal afflicted with prostatic hypertrophy which comprises orally administering to said mammal an effective dose for treating prostatic hypertrophy of levorin.

3,843,786

METHOD OF CONTROLLING HUMAN APPETITE

Gin O. Wong, Carson, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Nov. 5, 1973, Ser. No. 412,682
Int. Cl. A01n *9/00, 9/28*
U.S. Cl. 424—180 5 Claims

1. Method of controlling human appetite which consists essentially of ingesting orally from 10 to 60 minutes prior to mealtime from 500 to 4,000 milligrams of xanthan gum with from 3 to 12 ounces of liquid.

3,843,787

WATER SOLUBLE DERIVATIVE OF ERYTHROMYCIN

Gerardo Fabrizio, Santa Maria Caputa Vetere, Italy, assignor to Pierrel S.p.A., Via Turati, Milan, Italy

Division of Ser. No. 2,685, Jan. 13, 1970, Pat. No. 3,764,595. This application Dec. 8, 1972, Ser. No. 313,485
Claims priority, application Great Britain, Jan. 15, 1969, 02437/69
Int. Cl. A61k *21/00*
U.S. Cl. 424—181 3 Claims

1. A pharmaceutical composition containing erythromycin aspartate in association with a suitable pharmaceutical vehicle.

3,843,788

ANTI-PEPTIC ULCER SUBSTANCE FROM CORYDALIS TUBERS

Junzo Iwasa, Kyoto; Shunsuke Naruto; Noboru Ikeda, both of Osaka; Keiji Nakamura, Amagasaki, and Yukinobu Sohji, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 62,632, Aug. 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 735,162, June 7, 1968, abandoned, which is a continuation-in-part of Ser. No. 649,103, June 27, 1967, abandoned, which is a continuation-n-part of Ser. No. 493,267, Oct. 5, 1965, abandoned. This application Oct. 5, 1972, Ser. No. 295,163
Claims priority, application Japan, Oct. 20, 1964, 39-059633
Int. Cl. A61k *27/14*
U.S. Cl. 424—195 2 Claims

1. An anti-peptic ulcer active substance prepared by the process comprising (a) extracting a tuber of the genus Corydalis with a solvent selected from the group consisting of water, methanol, ethanol, propanol and mixtures thereof, (b) concentrating the resulting extract by vacuum distillation of solvent therefrom, (c) acidifying the concentrated extract to a pH of 1 to 4 by adding thereto acetic acid, tartaric acid, citric acid, hydrochloric acid, hydrobromic acid and sulfuric acid, (d) extracting the acidified aqueous solution of the extract with a hydrocarbon solvent selected from the group consisting of petroleum ether and petroleum benzin to remove the fatty substances therefrom, (e) raising the pH of the defatted aqueous acidic phase to 7.5 to 12 by adding thereto a base selected from the group consisting of ammonia, alkali metal hydroxide, alkali metal carbonate and alkali metal bicarbonate, (f) extracting the resulting aqueous alkaline solution with chloroform, dichloromethane, trichlomethane or carbon tetrachloride, separating the halohydrocarbon phase from the aqueous phase by vacuum distillation and recovering said active substance.

3,843,789

REMOVAL OF SULFUR OXIDES FROM STACK GAS

Marshall L. Spector, Belle Mead, N.J., and P. L. Thibaut Brian, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

Filed Feb. 26, 1973, Ser. No. 335,523
Int. Cl. C01b *11/00*
U.S. Cl. 423—242 10 Claims

1. In the scrubbing of combustion gases with aqueous ammoniacal solution for removal of contained sulfur oxides, the improvement which comprises effecting absorption of SO_2 by the ammoniacal scrubbing liquor under controlled conditions of concentrations of components at the absorption temperature such that the logarithm (to the base 10) of the product of the partial vapor pressures of SO_2, NH_3 and H_2O at all regions within the scrubber and prior to discharge of the vapor effluent therefrom into the atmosphere does not exceed the numerical value: $31.24 - (17{,}300/T)$, wherein the said partial pressures are expressed in millimeters of mercury and T is the Absolute temperature in degrees Rankine.

3,843,790
DIBENZODEPIN THERAPEUTIC AGENT

Yi-Han Chang, Waterford; William M. McLamore, Gales Ferry, and James R. Tretter, East Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 40,420, May 25, 1970,. This application May 8, 1972, Ser. No. 251,523
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 **9 Claims**

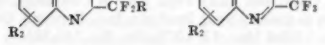
1. A method for alleviating inflammatory conditions in a warm-blodded animal, which comprises internally administering to an animal in need of treatment an anti-inflammatory amount of a compound selected from the group consisting of *trans*-2-chloro-11-(3-piperazinylpropylidene)-6H-dibenz[b,e]oxepin and the pharmaceutically acceptable acid addition salts thereof.

3,843,791
METHOD OF KILLING INSECTS WITH QUINAZOLINONES AND QUINAZOLINE-THIONES

James W. McFarland, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 11, 1973, Ser. No. 322,892
Int. Cl. A01n *9/22*
U.S. Cl. 424—251 **20 Claims**

1. A method of killing insects which comprises contacting said insects with an insecticidally effective amount of a compound of the formula



I II

or a salt thereof selected from the group consisting of the alkali metal, mono-alkylamine, dialkylamine and trialkylamine salt, wherein said alkyl contains from 1 to 12 carbon atoms, and wherein:

R is selected from the group consisting of H, F, Cl, perfluoroalkyl containing from 2 to 4 carbon atoms and —CXYZ wherein X, Y and Z are each selected from the group consisting of H, F and Cl;

R_1 is selected from the group consisting of H, F, Cl, Br, I and CF_3; and

R_2 is selected from the group consisting of H, F, Cl, Br, I and NO_2.

3,843,792
METHOD FOR CONTROLLING BACTERIA AND ALGAE WITH N-TETRAHALOETHYLTHIO CARBOXAMIDES

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 841,612, July 14, 1969, abandoned. This application Feb. 7, 1972, Ser. No. 224,290
Int. Cl. A01n *9/20*
U.S. Cl. 424—320 **7 Claims**

1. Method for controlling bacterial growth in an aqueous body which comprises adding a bactericidal quantity of a compound of the formula:

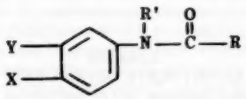
wherein R is hydrogen or methyl and R′ is tetrahaloethyl wherein the halogens are of atomic number 17 to 35, to the aqueous body.

3,843,793
A METHOD FOR THE TREATMENT OF BENIGN PROSTATIC HYPERTROPHY AND ACNE

Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Continuation of Ser. No. 263,906, July 19, 1972, abandoned. This application Oct. 26, 1972, Ser. No. 301,024
Int. Cl. A61k *27/00*
U.S. Cl. 424—324 **7 Claims**

1. A method for the treatment of benign prostatic hypertrophy or acne which comprises eliciting an anti-androgenic effect in mammals suffering from benign prostatic hypertrophy or acne by administering an antiandrogenically effective amount of a substituted anilide having the structural formula:



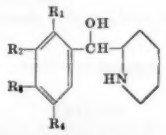
and the non-toxic pharmaceutically acceptable salts thereof wherein X is nitro, trifluoromethyl, chloro, bromo and iodo; Y is a member of the group consisting of hydrogen, chloro, bromo, iodo, nitro, lower alkyl, hydroxy, lower alkoxy, polyfluorolower-alkoxy, polyfluoroloweralkyl, trifluoromethylthio, trifluoromethylsulfoxy, and trifluoromethylsulfonyl; R′ is hydrogen and straight-chain lower alkyl having one to three carbon atoms, and R is branched chain lower alkenyl with the proviso that the double bond contained in said lower alkenyl moiety is not conjugated with the carbonyl moiety.

3,843,794
PHARMACEUTICAL COMPOSITIONS COMPRISING HYDROXYPHENYL-2-PIPERIDINYLCARBINOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 87,340, Nov. 5, 1970, Pat. No. 3,705,169, which is a continuation-in-part of Ser. No. 864,865, Oct. 8, 1969, abandoned. This application Sept. 5, 1972, Ser. No. 285,964
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 **11 Claims**

1. A pharmaceutical composition having β-adrenergic stimulant activity in dosage unit form comprising a pharmaceutical carrier and an effective amount of a chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound, wherein:

R_1 is hydrogen, methyl or chlorine;

R_2 is hydroxy; and

R_3 and R_4 are each hydrogen or hydroxy, with at least one being hydroxy.

3,843,795

METHODS FOR PRODUCING GLUCOCORTICOID-LIKE WATER DIURETIC AND ANTI-INFLAMMATORY ACTIVITY WITH DECININE

Virgil D. Wiebelhaus, Springfield, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 197,951, Nov. 11, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,703
Int. Cl. A61k 27/00
U.S. Cl. 424—267 5 Claims

1. A method of producing glucocorticoid-like water diuretic and anti-inflammatory activity which comprises administering decinine or a pharmaceutically acceptable acid addition salt thereof internally to an animal organism requiring said activity in an amount sufficient to produce said activity.

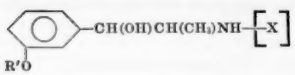
3,843,796

ANTIHYPERTENSIVE AGENTS

Charles S. Miller, deceased, late of Norristown, Pa. (by Ruth A. Miller, administrator), assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 26, 1971, Ser. No. 137,631
Int. Cl. A61k 27/00
U.S. Cl. 424—273 6 Claims

1. The method of treating hypertension in a human which comprises the administration to a hypertensive human of a hypotensive amount of a compound of the formula



where

[X] is

L-alanyl,
L-valyl,
L-leucyl,
L-norleucyl,
L-isoleucyl,
L-seryl,
L-threonyl,
L-cysteinyl,
L-methionyl,
L-prolyl,
L-hydroxyprolyl,
L-phenylalanyl,
L-tyrosyl,
L-tryptophyl,
L-α-aspartyl,
L-α-glutamyl,
L-β-hydroxy-α-glutamyl,
L-lysyl,
L-arginyl or
L-histidyl,

or an N-acylated derivative of these naturally-occurring amino acid radicals where said N-acyl group is

lower alkanoyl,
benzoyl,
phenyl lower alkanoyl,
lower alkoxy carbonyl or
benzyloxycarbonyl; and

R′ is

hydrogen or benzyl.

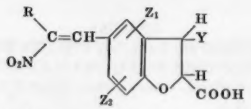
3,843,797

SALURETIC AND DIURETIC COMPOSITIONS AND METHOD WITH 2,3-DIHYDRO-5-(2-NITRO-1-ALKENYL-BENZOFURAN-2-CARBOXYLIC ACIDS AND PHARMACEUTICALLY ACCEPTABLE SALTS

Ernst Habicht, Oberwil/bl, Switzerland; Bernard Libis, Saint-Louis, France, and Anos Zergenyi, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 90,032, Nov. 16, 1970, Pat. No. 3,726,904.
This application Aug. 9, 1972, Ser. No. 278,887
Claims priority, application Switzerland, Nov. 20, 1969, 17273/69
Int. Cl. A61k 27/00
U.S. Cl. 424—285 4 Claims

1. A pharmaceutical composition in oral dosage unit form comprising a pharmaceutical carrier and a compound of the formula



wherein Y is hydrogen or methyl,

Z_1 is fluoro, chloro, methyl or methoxy,

Z_2 is hydrogen or methyl, and

R is alkyl having from 1 to 5 carbon atoms;

or a pharmaceutically acceptable salt thereof, in an amount sufficient to produce a diuretic and a saluretic effect upon administration of said dosage unit form.

3,843,798

METHODS AND COMPOSITIONS FOR INDUCING RESISTANCE TO BACTERIAL INFECTIONS

Elton S. Cook, and Akira Fujii, both of Cincinnati, Ohio, assignors to Stanley Drug Products, Inc., Portland, Oreg.

Filed Mar. 12, 1973, Ser. No. 340,386
Int. Cl. A61k 27/00
U.S. Cl. 424—319 6 Claims

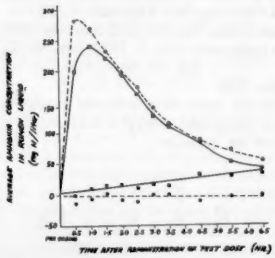
1. A method of treating bacterial infections in mammals comprising administering to a mammal suffering from said bacterial infection an antibacterially effective amount of an omega-guanidino acid having the formula $H_2N—C(=NH)—NH—(CH_2)_n—COOH$ where n is a whole number of 1 to 5.

3,843,799

METHOD OF FEEDING RUMINANTS N-GLUCOSYL-N′-YDROXYMETHYLUREA

Richard MacLeod Elofson; Larry Patrick Milligan; Jurgen Wohllebe, and Michael Worsley, all of Edmonton, Alberta, Canada, assignors to The Research Council of Alberta, Edmonton, Alberta, Canada

Filed Jan. 26, 1973, Ser. No. 327,206
Int. Cl. A23k 1/22
U.S. Cl. 426—2 1 Claim



1. A method for supplementing the nitrogen intake of a ruminant which comprises:

feeding it N-glucosyl-N′-hydroxymethylurea.

3,843,800

PREPARATION OF ACTIVE DRIED BAKER'S YEAST

Arend Langejan, Henri Dunantlaan 21, Delft, Netherlands

Continuation of Ser. No. 874,723, Nov. 6, 1969, abandoned. This application June 14, 1972, Ser. No. 262,727

Claims priority, application Great Britain, Nov. 8, 1968, 52950/68

Int. Cl. C12c *11/30*

U.S. Cl. 426—18 17 Claims

1. A process for preparing a composition consisting essentially of an active dried bakers' yeast with a particle size of 0.1 to 1.0 mm and with a dry matter content of a least 85 percent by weight, a protein content (% N × 6.25) of 45 to 60 percent based on dry matter and an activity value of 420 to 600 when determined by test method B^2 consisting of the steps of dividing a fresh compressed yeast having a protein content (% N × 6.25) of 45 to 60 percent on dry weight basis into a mass of particles having a particle size of 0.2 to 2.0 mm and drying the mass of particles by passing therethrough a drying gas at a temperature of not more than 160°C in not more than 120 minutes to a dry matter content of at least 85 percent by weight with a drying gas flow so that the particles are held within a temperature range of from 20° to 50°C to obtain a dried bakers' yeast.

3,843,801

PREPARATION OF FETA CHEESE

Constantine John Efthymiou, 84-63 126th St., Kew Gardens, L.I., N.Y. 11415

Continuation-in-part of Ser. No. 142,415, May 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 776,219, Oct. 25, 1968, abandoned, which is a continuation-in-part of Ser. No. 380,637, July 6, 1964, abandoned. This application Jan. 18, 1973, Ser. No. 324,760

Int. Cl. A23c *19/02*

U.S. Cl. 426—36 3 Claims

1. In a process for making soft, white, pickled, Feta-type cheese, the step of pasteurizing the milk, the step of acidifying the milk to a sufficient increase of titratable acidity to effect optimal coagulation using conventional means such as lactic acid producing bacteria or food acid, the step of inducing coagulation, the step of allowing coagulation to produce a curd, the step of cutting the curd into suitable pieces to remove whey, the step of mechanically agitating the cut curd to facilitate further whey expulsion and development of firmness, the step of dipping the curd into perforated containers to further expel whey, give shape to the cheese and effect initial ripening, the step of agitating the containers to enhance uniform drainage at room temperature, the step of transferring the containers to a curing room maintained at a temperature below approximately 68° F. with a high relative humidity, the step of cutting the cheese into suitable pieces which are salted up to approximately 3 percent of the weight of the ripened cheese, the step of exposing the cheese uniformly to ripening conditions by suitable manipulation, and the improvement which comprises the step of adding during the step of acidifying the milk the combination of ripening agents comprising a rated amount of proteolytic lacto-bacilli to effect a controlled, advanced degree of proteolysis associated with a creamy, soluble body and *Streptococcus faecium* strains of enterococci viable and active through the range of ripening parameters, said process producing a substantially predetermined high level of acetic acid against a low profile of free fatty acids and a piquant, pickled cheese, the flavor of which is practiccally devoid of rancidity and bitterness.

3,843,802

PROTEINACEOUS MATERIAL FOR BEVERAGE USE AND METHOD

Gabor Puski, Hanover Park, Ill., assignor to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Oct. 1, 1971, Ser. No. 185,842

Int. Cl. A23l *1/02, 1/20;* A23j *3/00*

U.S. Cl. 426—46 2 Claims

1. A process for treating a protein material selected from the class consisting of soybean protein, sodium caseinate, wheat gluten, fish protein concentrate, and microbial protein to produce an acid-soluble product and incorporating said product into beverages consisting essentially in the steps of forming an acid protein curd from said protein material,

heating said curd for a period of time sufficient to reduce microbiological contamination,

forming a slurry of said curd and mixing it with sufficient amount of proteolytic enzyme selected from the class consisting of a ficin, fungal proteases, bacterial proteases, pepsin, and papain to render soluble at an acidic pH a major portion of said curd by adjusting the pH, temperature and enzyme concentration, of said slurry and continously mixing the protein-enzyme slurry for a predetermined time up to about two hours, thereby producing a product having an N-terminal free amino acid group content in the range of about 0.125 to about 0.225 per 100 grams of protein, heating the protein-enzyme slurry after said predetermined time to a temperature sufficient inactivate said proteolytic enzyme, separating insoluble protein from said slurry, drying said soluble protein curd, and incorporating from about 1 percent to about 3 percent of said soluble protein in a beverage having a pH in the range of about 2 to about 5.5.

3,843,803

PROCESS FOR PRODUCING FIBERS FROM NATURAL PROTEIN OF ANIMAL ORIGIN

Nobumitsu Yano; Hideomi Takahashi, and Yoshitaka Hayasho, all of Saitama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 6, 1972, Ser. No. 286,841

Claims priority, application Japan, Sept. 13, 1971, 46-70386; Nov. 15, 1971, 46-90598; Nov. 15, 1971, 46-90599

Int. Cl. A23j *3/00*

U.S. Cl. 426—56 21 Claims

1. A process for producing fibrous protein from a solution of protein of animal origin or of protein of animal origin and vegetable origin by extruding an aqueous solution of protein into a coagulation bath, which comprises

forming an aqueous protein solution at a pH of from 10 to 12 and at a temperature of from 30° to 60°C., said solution containing from 5 to 15 percent by weight of protein when the protein is of animal origin and from 5 to 20 percent by weight when the protein is of animal and vegetable origins,

adding to said aqueous protein solution from 2 to 80 percent by weight, based upon the protein of animal origin content of said aqueous protein solution, of at least one unsaturated fatty acid having from 14 to 22 carbon atoms or at least one non-toxic salt thereof,

agitating the resulting mixture and defoaming said mixture, whereupon a viscous solution is formed,

extruding said viscous solution into a coagulation bath maintained at a pH of from about 2 to about 5 and containing at least one inorganic salt, thereby obtaining threads of protein, and

stretching said threads to from 150 to 500 percent of their original length.

3,843,804

NOVEL FLAVORING COMPOSITIONS AND PROCESSES

William J. Evers, Atlantic Highland, and Manfred H. Vock, West Orange, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

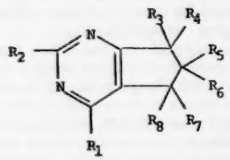
Division of Ser. No. 123,023, March 10, 1971,. This application Dec. 12, 1972, Ser. No. 314,349

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 16 Claims

1. A process for altering the organoleptic properties of foodstuff material which comprises adding thereto a small but

effective amount of at least one cyclopentapyrimidine having the formula



wherein R_1 is an alkyl group containing from one to four carbon atoms, an alkoxy group containing from one to four carbon atoms, an alkylthio group containing from one to three carbon atoms, a cycloalkylthio group containing from three to five carbon atoms, or hydrogen, R_2 is an alkyl group of from one to four carbon atoms or an alkylthio group of from one to three carbon atoms, R_3 through R_8 are the same or different and are hydrogen or lower alkyl containing one to three carbon atoms, and R_1 and R_2 are not both alkylthio.

3,843,805

BASE COMPOSITION FOR PREPARING FOOD PRODUCTS

Louis A. Powell, Winter Haven, Fla., assignor to Wellman-Power Gas Incorporated, Lakeland, Fla.

Continuation-in-part of Ser. No. 145,066, May 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 886,743, Dec. 19, 1969, abandoned, which is a continuation-n-part of Ser. No. 728,919, May 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 401,254, Oct. 2, 1964, abandoned. This application Mar. 7, 1972, Ser. No. 232,628

Int. Cl. A23i *1/00;* **A23c** *9/08*

U.S. Cl. 426—92 **46 Claims**

1. A composition for use as a base composition in preparing aqueous whipped food products, consisting essentially of a solid particle from admixture of pregelatinized starch, about 3 to 75 percent, by weight of the starch, of calcium acetate, about 3 to 300 percent, by weight of the starch, of sodium caseinate, and about 0.5 part or greater, per part by weight of starch, of a filler selected from the group consisting of fat, casein, and mixtures of fat and casein, with the proviso that if said admixture contains fat, it also contains a minor amount, effective to emulsify the fat, of an edible emulsifier for the fat.

3,843,806

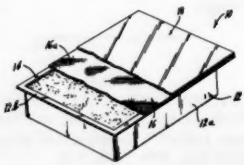
GRANULAR PACKAGE

Allan Kishpaugh, and Donald J. Hagen, both of Wayne, N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Division of Ser. No. 239,076, March 29, 1972, Pat. No. 3,750,362. This application Apr. 27, 1973, Ser. No. 355,070

Int. Cl. B65d *81/20;* **A23l** *1/06*

U.S. Cl. 426—106 **7 Claims**



1. A vacuum-sealed package of granular material comprising a bottom package member defining a material-receiving cavity containing said granular material, an intermediate package member substantially permeable to the flow of gases therethrough but substantially impermeable to the flow of granular material therethrough, a continuous, uniform and full seal between said bottom package member and said intermediate package member and a top package member sealed to said bottom package member to maintain the vacuum in said vacuum-sealed package.

3,843,807

TEXTURIZING PROCESS FOR SINGLE-CELL PROTEIN

John A. Ridgway, Jr., La Porte, Ind., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 47,896, June 19, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,469

Int. Cl. A23j *3/00*

U.S. Cl. 426—137 **17 Claims**

1. A process for developing texture in microbial cells comprising the steps of:

a. preparing an aqueous paste of microbial cell material, containing from about 15 to about 40 wt. % water and at least about 2 wt. % (dry basis) ruptured cells;

b. extruding the paste at a temperature within the range from about 70° to about 350°F.;

c. heat-treating the extrudate at a temperature within the range from about 180°F. to about 350°F. for a period of time inversely related to the temperature employed and within the range from about 0.1 to about 30 minutes; and

d. drying the heat-treated extrudate to produce a product which is crisp, crunchy, chewy, has a bland or pleasing flavor and resists dispersion in water.

3,843,808

CHEESE CRUMBLES

Salvatore F. Ziccarelli, Downers Grove, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Mar. 6, 1973, Ser. No. 338,523

Int. Cl. A23c *19/12*

U.S. Cl. 426—187 **16 Claims**

1. A cheese-flavored, shelf-stable and self-preserving composition comprising 10 percent to 70 percent dry cheese solids and from 30 percent to 50 percent of finely divided fat particles having an average particle size of not greater than about 0.5 millimeter, said fat having a melting point in the range of from 90°F. to 125°F. and said fat particles being substantially coated with a fat enrobing agent which prevents coalescing of the fat particles by preventing fat to fat contact of the fat particles wherein the enrobing agent constitutes from 1 percent to 20 percent of the composition, and said composition has a moisture content of no more than 5 percent by weight.

3,843,809

MANUFACTURE OF ALCOHOLIC BEVERAGES

Egon Luck, 207 Baythorne Dr., Thornhill, Ontario, Canada

Filed Aug. 23, 1972, Ser. No. 282,953

Int. Cl. C12g *3/06*

U.S. Cl. 426—192 **12 Claims**

1. A method for making an alcoholic beverage which comprises reacting an organic acid selected from the group consisting of citric, malic and tartaric acids, and mixtures thereof, with ethanol to obtain esterification between the acid and ethanol, with the proportion of organic acid being from about 0.1 to 3 percent on a final beverage basis and with the amount of ethanol being sufficient to provide a beverage containing about 6 to 60 percent of ethanol, in the presence of about 0.1 to 200 parts per million of a bisulfite esterification catalyst for the reaction, said proportion of such catalyst being sufficient

to catalyze the esterification reaction between the acid and ethanol, and admixing a flavoring proportion of a flavoring agent with the mixture of alcohol and ester produced.

3,843,810

PROCESS OF AIR EVACUATION OF FOODS UNDER ULTRA-LOW PRESSURE

Gottlieb Bernhard Fehmerling, Bridgeton, N.J., assignor to Fehmerling Associates, Bridgeton, N.J.

Continuation-in-part of Ser. No. 60,765, Aug. 3, 1970, abandoned. This application May 16, 1972, Ser. No. 253,723

Int. Cl. A22c *29/00;* **A23b** *7/00;* **A23l** *1/28*

U.S. Cl. 426—204 **19 Claims**

1. The process of enhancing the appearance texture and storage characteristics of foods selected from the group consisting of fruits, vegetables, marine creatures and mushrooms by removing substantially all gases from the tissues and cells of said foods and substituting therefore an aqueous solution into the said tissues, the process comprising:

submersing said foods in said solution contained in enclosed vessel,

subjecting said submersed foods to a reduction in pressure down to 200–300mm mercury at a rate of pressure decrease not greater than 125 mm of mercury per minute, further decreasing the pressure from 200–300mm mercury to a pressure not greater than 13mm of mercury (absolute) at a rate of pressure decrease not greater than 12mm mercury per minute, both said pressure decrease steps consuming at least a total of 28 minutes, continuing to subject said submersed foods to an absolute pressure of not greater than 13mm of mercury for a dwell time period of at least 1 hour to substantially remove all gases from said tissue and cells,

increasing the pressure thereafter to fill with said solution the voids formed in said tissues and cells by the evacuation of the gases,

said pressure increase being performed by increasing the pressure up to 55–65mm of mercury at a rate of pressure increase not greater than 12mm of mercury per minute, further increasing the pressure from 60mm of mercury up to atmospheric pressure at a rate of pressure increase not greater than 35mm of mercury per minute, both said pressure increase steps consuming at least a total of 28 minutes, whereby said foods are substantially filled with said solution and thereafter removing said foods from said vessel.

3,843,811

LOW FAT EGG PRODUCT

Robert D. Seeley, Crestwood, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Mar. 23, 1972, Ser. No. 237,563

Int. Cl. A23l *1/32*

U.S. Cl. 426—211 **1 Claim**

1. A low-fat, low cholesterol frozen egg mix comprising by weight

A. about 4 percent to about 6 percent liquid whole egg,

B. about 92.5 percent to about 88.5 percent liquid egg white,

C. about 2 percent to about 2.6 percent potato flour,

D. about 0.1 percent to about 0.2 percent carboxymethyl cellulose,

E. about 1.4 percent to about 1.8 percent non-fat milk solids, and

F. sufficient citric acid to provide a pH between about 6.8 and about 7.9 in the mix,

G. said mix containing about 0 to 1.1 percent fat, about 8 to 18 percent protein, and less than about 0.05 percent cholesterol.

3,843,812

CONCENTRATED STABLE SOLUTIONS OF SOLID EDIBLE ACIDS, PROCESS OF MAKING, AND METHOD OF USING SAME

Peter Kuhnert, Mannheim, and Doris Luetz-Binder, Neustadt, both of Germany, assignors to Joh A. Benckiser GmbH, Ludwigshafen am Rhein, Germany

Filed Apr. 21, 1972, Ser. No. 246,308

Claims priority, application Germany, Apr. 28, 1971, 2120846

Int. Cl. A23g *3/00;* **A23l** *1/26*

U.S. Cl. 426—213 **22 Claims**

1. In a process of producing a concentrated stable solution of a solid edible carboxylic acid, the steps which comprise

a. intimately mixing the solid edible carboxylic acid with a physiologically substantially inert polyalcohol,

b. rapidly heating the mixture to a temperature between about 80°C. and about 150°C. within a period of time not substantially exceeding about 10 minutes to cause dissolution of the edible acid in the polyalcohol,

c. maintaining the mixture at said temperature for a period of time sufficient to produce a clear solution of the edible carboxylic acid in the polyalcohol, and

d. rapidly cooling the resulting solution to a temperature below about 60°C.

3,843,813

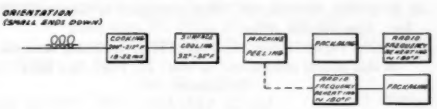
METHOD AND APPARATUS FOR TREATING EGGS

Leslie W. Driggs, West Sand Lake, N.Y., assignor to Nutrionics Machine Corporation, Hoosick Falls, N.Y.

Division of Ser. No. 54,969, July 15, 1970,. This application May 24, 1973, Ser. No. 363,333

Int. Cl. A23b *5/00;* **A23l** *1/32*

U.S. Cl. 426—241 **3 Claims**



1. A method for treating hard cooked poultry eggs to pasteurize the eggs and to reduce the green coloration of portions of eggs which have such green coloration or are subject to green coloration development, said process comprising subjecting the hard cooked eggs to radio frequency energy in the range of about 50 to about 100 megahertz to raise the temperature of the eggs to about 180°F.

3,843,814

METHOD FOR PREPARING COATED POPCORN

Ingeborg Grunewald-Kirstein, Handelsstrasse 1, Eppelheim, Germany

Continuation-in-part of Ser. No. 197,484, Nov. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 18,324, March 10, 1970, abandoned. This application July 18, 1972, Ser. No. 272,728

Claims priority, application Germany, Dec. 9, 1969, 1961745

Int. Cl. A23l *1/18*

U.S. Cl. 426—307 **7 Claims**

1. A method of manufacturing popcorn coated with a substantially continuous layer of sugar or caramel, which comprises:

a. preparing a liquid coating mass by first heating edible oil or fat to form a hot liquid and then dissolving sugar or syrup in the hot liquid in an amount such that the sugar or syrup comprises at least one half of the liquid coating mass thus obtained,

b. adding raw corn kernels to the hot liquid coating mass while the coating mass is at a temperature above the popping temperature of the kernels but at least about 20°-30°C below the boiling temperature of the mass said temperature being about 200°C, whereby the kernels are popped and coated with said mass and

c. maintaining the temperature of (b) until the moisture in the kernels has evaporated.

3,843,815

INHIBITING GEL FORMATION IN MEAT-IN-GRAVY PRODUCTS

Stanley H. Reesman, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,313

Int. Cl. A23b *1/12*

U.S. Cl. 426—325 **1 Claim**

1. In the preparation of a packaged meat-in-gravy pet food which at room temperature exhibits the formation of a gel in the gravy portion thereof comprising forming meat pieces containing collagen from meat by-products, adding said meat pieces to a liquid gravy comprised of water and added thickeners selected from the group consisting of gums, starches, and mixtures thereof to a container, sealing the container and retorting said container at temperatures sufficient to dissolve said collagen, the improvement comprising adding from about 0.5 percent to about 3.5 percent by weight of the gravy mixture of a weak acid selected from the group consisting of phosphoric acid, citric acid, and tartaric acid to said liquid gravy prior to sealing the container to inhibit formation of a gel in the liquid gravy upon cooling of said packaged meat-in-gravy food.

3,843,816

TEXTURIZING OF PROTEIN

Ali R. Touba, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Oct. 19, 1971, Ser. No. 190,637The portion of the term of this patent subsequent to Mar. 21, 1989, has been disclaimed.

Int. Cl. A23j *1/14*

U.S. Cl. 426—388 **10 Claims**

1. A method for texturizing protein comprising compressing and heating untextured protein material between a pair of parallel opposing heated surfaces for a period of time up to 1 minute, said material having a protein content of at least 50% dry weight basis, said material having a moisture content of between about 15% and 35% by weight, said heated surfaces being at a temperature and applying a pressure sufficient to cause said protein to texturize and sufficient to rapidly superheat said moisture, said temperature being between 350° and 550° F., said pressure being in the range of 50 to 1,000 p.s.i.g., the force of said compression being sufficient to entrap at least a portion of said superheated moisture, and rapidly releasing said compression thereby vaporizing said superheated moisture and expanding the texturized protein.

3,843,817

MANUFACTURE OF AQUEOUS PASTE OF SUCCINYLATED MONOGLYCERIDES

Leonard J. Swicklik, and Lewis G. Jacobs, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 14, 1972, Ser. No. 262,800

Int. Cl. A21d *2/32, 2/16*

U.S. Cl. 426—342 **4 Claims**

1. A process for producing a stable aqueous emulsion in a paste form comprising the steps of

A. mixing a composition of, by weight,

1. 15 to 20 percent glyceryl monoesters,
2. 60 to 65 percent monosuccinylated glyceryl monoesters,
3. 8 to 12 percent disuccinylated glyceryl monoesters, and
4. 6 to 8 percent glyceryl diesters, said monoesters and diesters being derived from saturated fatty acids having from 16 to 18 carbon atoms, with a water phase containing minor amounts of lecithin, sodium propionate or a mixture of lecithin and sodium propionate maintained at a temperature of 88° to 90°C., forming a translucent gel-like dispersion; and

B. cooling the dispersion in a scraped surface cooler having an outlet temperature of 27° to 30°C. and removing the emulsion so formed as an aqueous paste.

3,843,818

PROCESS FOR PRODUCING LOW CALORIE PASTA

Martha A. Wren, and Joseph D. Mullen, both of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 13, 1972, Ser. No. 314,657

Int. Cl. A23c *1/16*

U.S. Cl. 426—346 **7 Claims**

1. A method for preparing a low calorie pasta comprising mixing from 15 to 50 parts of polygalactomannan gum and from 85 to 50 parts of a mixture of vegetable protein and cereal material, dry weight basis;

adjusting the moisture content to between 28 and 38 percent by weight to provide a hydrated mixture;

working the hydrated mixture in an extruder and raising the temperature of the material to be between 55° and 98°C.; and

extruding the worked mixture to form a pasta.

3,843,819

EDIBLE CAPSULES

Walter Rostagno, Corseaux, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 23, 1971, Ser. No. 211,474

Claims priority, application Switzerland, Jan. 14, 1971, 529/71

Int. Cl. A23g *3/00*

U.S. Cl. 426—363 **7 Claims**

1. A process for producing an edible capsule comprising forming a drop of hydrophilic liquid selected from the group consisting of syrup and liqueur, applying around said hydrophilic liquid drop a continuous film of hydrophobic material comprising vegetable fat in liquid form substantially simultaneously with the formation of said drop, and cooling the resultant, coated drop to a temperature below the total solidification temperature of said hydrophobic material.

3,843,820

THIN FILM DRYING OF SORGHUM SYRUP WITH ADDITION OF SOY PROTEIN

Elmer F. Glabe, Chicago; Perry W. Anderson, Niles, and Sterglos Laftsidis, Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Filed Apr. 5, 1973, Ser. No. 348,134

Int. Cl. A23k *1/02*

U.S. Cl. 426—378 **10 Claims**

1. A process for dehydrating sorghum syrup which comprises intimately mixing said syrup with an at least partially defatted soy protein to form a slurry, and subsequently subjecting said slurry in a thin film to a heated surface for a period of time sufficient to dehydrate said slurry, the quantity of said soy protein being sufficient to enhance the crispness of said film, the protein content of said soy protein being at least 45 percent by weight, the water soluble protein content being at

least 20 percent by weight of the total protein content, and the weight ratio of water soluble protein to fat content being at least 1.5:1, in which said soy protein comprises approximately 30 parts by weight and said sorghum syrup approximately 70 parts by weight.

3,843,821

THIN FILM DRYING OF MOLASSES WITH ADDITION OF SOY PROTEIN

Elmer F. Glabe, Chicago; Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Filed Apr. 5, 1973, Ser. No. 348,135
Int. Cl. A23k *1/02*
U.S. Cl. 426—378 9 Claims

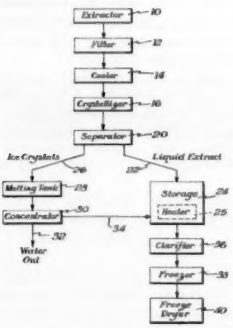
1. A process for dehydrating molasses which comprises intimately mixing said molasses with an at least partially defatted soy protein flour to form a slurry, and subsequently subjecting said slurry in a thin film to a heated surface for a period of time sufficient to dehydrate said slurry, the quantity of said soy protein being sufficient to enhance the crispness of said film, the protein content of said soy protein being at least 45 percent by weight, the water soluble protein content being at least 20 percent by weight of the total protein content, and the weight ratio of water soluble protein to fat content being at least 1.5:1, in which said soy protein comprises approximately 35 parts by weight and said molasses approximately 65 parts by weight.

3,843,822

METHOD FOR PREPARING SUCROSE-FIXED ACETALDEHYDE

William A. Mitchell, Lincoln Park, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,463
Int. Cl. A23l *1/26*
U.S. Cl. 426—380 11 Claims



1. A method for producing sucrose-fixed acetaldehyde which comprises:

a. admixing paraldehyde with a supersaturated, aqueous sucrose solution;

b. causing crystallization to proceed at such temperatures and at such a rate that the paraldehyde is rapidly depolymerized to acetaldehyde which is fixed in the sucrose crystals at a level of less than about 0.25% by weight of the crystal; and

c. drying the sucrose-fixed acetaldehyde.

3,843,823

METHOD OF REMOVING UNDESIRABLE SOLIDS FROM COFFEE EXTRACT

Richard A. Chaplow, Pierre Fonds, Quebec, and Ronald A. Hodgman, Lachine, Quebec, both of Canada, assignors to General Foods, Limited, Ontario, Canada

Continuation-in-part of Ser. No. 855,970, Sept. 8, 1969, Pat. No. 3,765,910. This application May 21, 1970, Ser. No. 39,198
Int. Cl. A23f *1/08*
U.S. Cl. 426—384 17 Claims

1. A method of removing undesirable solids from coffee extract comprising the steps of obtaining coffee extract, filtering said extract in a medium duty filter to remove visible sediment and organic material and to highly reduce microscopic insolubles, reducing the temperature of the filtered extract, freeze concentrating said extract, subsequently heating said concentrated extract to between 50°–80° F and clarifying the heated concentrated extract in a desludging-type centrifuge effective to remove insolubles which if not removed prior to drying cause undesirable black spots to appear as foreign matter in a reconstituted cup of coffee.

3,843,824

METHOD FOR THE PRODUCTION OF CAFFEINE-FREE COFFEE EXTRACT

Wilhelm Roselius, Bremen-St. Magnus; Otto Vitzthum, Bremen, and Peter Hubert, Bremen-Lesum, all of Germany, assignors to HAG Aktiengesellschaft, Bremen, Germany

Filed Apr. 19, 1972, Ser. No. 245,501
Claims priority, application Germany, Apr. 22, 1971, 2119678
Int. Cl. A23f *1/10*
U.S. Cl. 426—386 17 Claims

1. A method for the production of substantially caffeine-free coffee extract products which comprises

a. separating coffee oil containing aroma substances by extraction of rough-ground roast coffee with a dry supercritical fluid having selective dissolving capacity for the coffee oil and aroma substances, at a pressure of at least 80 atmospheres excess and a temperature above 30°C.,

b. wetting the thus extracted rough-ground coffee with water and extracting the thus wetted product with wet supercritical carbon dioxide to remove the caffeine in the rough-ground coffee.

c. extracting the rough-ground coffee remaining from the previous step with water to produce an aqueous extract,

d. drying said aqueous extract to obtain a powder residue,

e. recovering the coffee oil containing aroma substances from the extraction of step a) and adding at least a portion thereof to a coffee extract.

3,843,825

METHOD OF FORMING A PACKAGED EGG PRODUCT

Robert Lyle Hawley, Webster Groves, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 848,163, Aug. 7, 1969, abandoned. This application July 23, 1971, Ser. No. 165,575
Int. Cl. B65b *5/04*
U.S. Cl. 426—393 4 Claims

1. A method for continuously producing and packaging an egg product which substantially resembles a hard boiled egg

half having the yolk portion thereof removed comprising the steps of forming a plurality of cavities in the lower portion of a sheet member, the cavities having a shape substantially resembling an egg half, metering a predetermined amount of liquid albumen into each of said cavities, forming a package by placing a lid member onto the lower portion of the sheet member and in fluid pressure sealing engagement therewith about each of said cavities, said lid member including a plurality of protuberances for registering with said cavities, thereby displacing the liquid albumen with said protuberances to form the liquid albumen into the desired shape of the egg half having the yolk portion removed, heating the package by conveying the package through a steam atmosphere which does not enter the cavities due to the fluid pressure seal formed between the lid and lower portion of the package about each of the cavities; the package being heated to a temperature of approximately 170° – 210°F. and for a period of time about 40 – 5 minutes to coagulate the albumen and thereafter without removing the coagulated albumen from the package freezing the coagulated albumen by subjecting the package to a refrigerated atmosphere.

3,843,826

METHOD FOR PRODUCTION OF CASTELLA OR SOFT CAKE

Kanehiro Hirakawa, 2-10 Fujigaya 2-chome, Kanagawa, Japan

Continuation-in-part of Ser. No. 30,820, April 22, 1970, abandoned. This application June 2, 1972, Ser. No. 259,267

Int. Cl. B65b *55/100*

U.S. Cl. 426—399 **3 Claims**

1. A method of producing castella or soft cake comprising providing a sterilization chamber sealed from the surrounding atmosphere, baking a unit of castella in a sterilized oven and conveying the hot castella directly from the oven into the sterilization chamber so that it is maintained in a sterile atmosphere, automatically dividing the unit of baked castella into sections of desired size within the sterilization chamber, introducing the divided hot castella into a laterally closed flow path within the sterilization chamber, flowing air through the flow path at a temperature range of **15° – 25°C.** with a moisture content in the range of **20 – 30** percent and passing the castella along the flow path for contact with the air for a period of time of **15 – 20** minutes for rapidly removing the moisture from the surface of the castella while retaining the moisture content within the interior of the castella, packing and hermetically sealing the castella in a sterilized container within the sterilization chamber after the completion of its passage through the flow path, and discharging the sealed castella from the sterilization chamber.

3,843,827

PROCESS FOR BAKING FOODSTUFFS

Charleston Roy Lee, Bethel, Conn.; Dorothy Mary King, Irvington, and Edward Einar Clausen, Peekskill, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,337

Int. Cl. A23b *1/10, 3/14, 7/16*

U.S. Cl. 426—293 **2 Claims**

1. A process for imparting to a cooked foodstuff the texture and appearance of deep fat-frying, which comprises, combining raw egg and about 2½ to 3½ ounces of milk or water with about 80 to 100 grams of a dry mix which comprises, by weight of the dry mix, 60 percent–75 percent wheat flour, 7 percent–12 percent shortening, 7 percent–12 percent cornstarch and 1½ percent–3 percent pregelatinized waxy maize starch; coating the foodstuff evenly with said batter; uniformly coating the batter coated foodstuff with a second dry mix which comprises, by weight of the dry mix, 35 percent–50 percent cereal fines, 15 percent–25 percent pregelatinized waxy maize starch, 3 percent–15 percent shortening, and 10 percent–15 percent wheat flour; and baking the foodstuff until done.

3,843,828

PREPARATION OF A SIMULATED MILK PRODUCT

Robert H. Arndt, Red Wing, Minn., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 642,737, June 1, 1970, Pat. No. 3,642,493. This application Feb. 11, 1972, Ser. No. 225,604The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Int. Cl. A23c *21/00, 11/00*

U.S. Cl. 426—360 **14 Claims**

1. A method of preparing a simulated milk type product comprising the steps of: preparing a neutralized aqueous suspension of an isolated vegetable protein ingredient and sweet dairy whey, having a solids content within the range of 3 – **50%**, with the protein content being in the range of about 7 – 50%, controlling the pH of the suspension within the range of about 5.8 – 7.5, heating the suspension rapidly to temperatures of about 220° F. to about 400° F., and subjecting it to dynamic physical working, retaining the suspension for a brief period of time under a positive pressure sufficiently high to prevent volatilization of heated water vapor from the heated suspension, suddenly releasing the pressure to cause flash off volatilization of vapor laden with substances that possess undesirable flavor and odor characteristics, separating the vapors from the treated suspension, blending said treated suspension with from about 8 – 65% vegetable fat having a melting point generally of about 77 – 104° F., to cause said vegetable protein to act as a fat and water binder, controlling the pH of the mixure within the range of about 6.0 – 7.5 and subjecting the mixture to severe homogenization for effecting proper flavor as well as excellent dispersion.

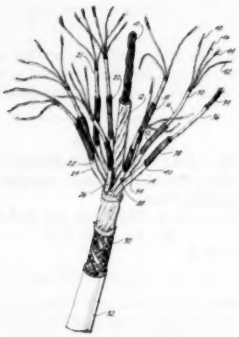
ELECTRICAL

3,843,829

CENTER STRENGTH MEMBER CABLE

Robert M. Bridges, Northridge, and John J. Jason, Woodland Hills, both of Calif., assignors to The Bendix Corporation, North Hollywood, Calif.

Filed Mar. 2, 1973, Ser. No. 337,357
Int. Cl. H01b *11/06*
U.S. Cl. 174—36 **5 Claims**



1. An electrical cable comprising
a torque-balanced wire rope member capable of carrying substantially the entire load on said cable,
a thick layer of soft insulating material surrounding said wire rope member,
a plurality of conductor members of small diameter relative to said cable spirally wound around said layer, each of said members including at least one conducting wire, an insulating layer around said wire, a spirally wound shield of conducting wires in at least some of said conductor members and an insulating layer around said shield,
an open braid of fabric material wrapped around said conductor members, and
an insulating jacket surrounding said braid.

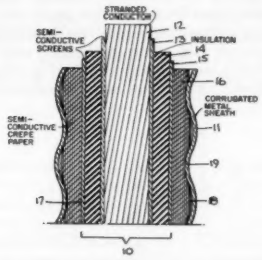
3,843,830

ELECTRIC CABLE WITH CORRUGATED SHEATH AND SEMI-CONDUCTIVE PROTECTIVE LAYER BETWEEN THE SHEATH AND THE CORE

Paulo Gazzana Priaroggia, Milan, and Gabriele Maschio, Monza, both of Italy, assignors to Industrie Pirelli Societa Per Azioni, Milan, Italy

Filed Oct. 5, 1973, Ser. No. 403,962
Claims priority, application Italy, Nov. 13, 1972, 31581/72
Int. Cl. H01b *7/20*
U.S. Cl. 174—102 D **6 Claims**

1. An electric cable comprising at least one core including a conductor surrounded throughout substantially its length by at least one layer of insulating material and an external screening layer of at least semi-conductive material surrounding said insulating layer, a corrugated metal sheath surrounding said core and a tube comprising solid, at leat semi-conductive material intermediate said core and said sheath and in frictional engagement and electrical contact with said screening layer and said sheath and at least partially filling the corrugations of said sheath to prevent slipping of said core with respect to said sheath and to conductively interconnect said screening layer and said sheath, said tube beings self-sustaining, resilient and softer than the material of said core to permit deformation of said tube by the corrugations of said sheath without substantial deformation of said core and said



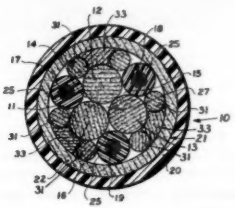
tube having a shear strength sufficient to prevent said slippage without shearing when said cable is suspended by said sheath.

3,843,831

LOW CAPACITANCE AND LOW LEAKAGE CABLE

Donald W. Hutchison, Franklin, and Mark A. Stolle, Richmond, both of Ind., assignors to Belden Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,328
Int. Cl. H01b *7/04*
U.S. Cl. 174—116 **9 Claims**



1. A cable comprising at least three elongated fillers extending the length of the cable in engagement with each other, said fillers being arranged in a group to form at least three elongated recesses extending the length of the cable, at least three elongated conductors extending the length of the cable, each of said conductors lying against the outside of said group of fillers in a respective one of said recesses formed thereby, cylindrical wall means surrounding said conductors, said wall means and said fillers being comprised of a material having a dielectric constant less than about two and having a substantial flame-retarding capability, and an outer jacket of insulation for said cable covering said fillers and said conductors.

3,843,832

CAPACITANCE PROBE

Oscar J. Petersen, Orange, and Henry A. Cetola, Yorba Linda, both of Calif., assignors to Robertshaw Conrols Company, Richmond, Va.

Filed Apr. 4, 1973, Ser. No. 347,924
Int. Cl. H01g *7/00;* **H01b** *17/26*
U.S. Cl. 174—151 **10 Claims**

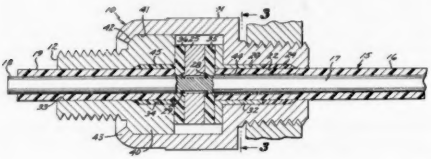
1. A capacitance probe assembly for insertion into a sealed container, comprising:
disc means;

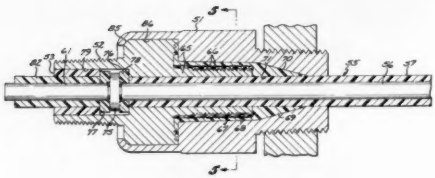
a center conductor passing through said disc means and extending substantially normal therefrom, said disc means surrounding a central portion of said conductor;

a gland fitting including a first central opening receiving an end of said center conductor;

deformable insulator means enclosing said end of said center conductor for providing insulation interspaced between said gland fitting and said center conductor;

compression means axially receiving internally thereof the other end of said center conductor, said compression means being in turn axially received in press fit engagement in said gland fitting to a preselected level of compression;





insulative washer means interspaced between said disc means and said gland fitting and between said disc means and said compression means for electrically insulating and transferring compressive and shear forces therethrough; and

sealing means operatively connected for compression to said compression means and interposed in said first central opening between said gland fitting and said insulator means for deforming therebetween and closing leakage paths thereacross.

3,843,833

TWO-PIECE SCREW-IN ADJUSTABLE BUSHING

John H. Nicholson, Ferndown, England, assignor to Heyman Manufacturing Company, Kenilworth, N.J.

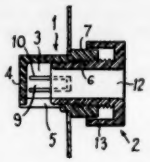
Filed May 9, 1973, Ser. No. 358,644

Claims priority, application Great Britain, May 10, 1972, 21975/72

Int. Cl. H01b *17/26;* **F16l** *5/00*

U.S. Cl. 174—153 G **9 Claims**

1. An electric bushing of the type intended to be inserted in an aperture in a mounting member and adapted to receive and lock an electrical conductor against movement therethrough whilst electrically insulating the conductor from the mounting member, comprising first and second generally tubular body portions connected together the second within the first, both body portions being provided with passages which together define an electrical conductor receiving passage extending through the two body portions of the bushing, said first body portion including a transverse wall, said first body portion including a longitudinally extending slot adapted to receive an electrical conductor therethrough, said first and second body portions being mutually telescopically adjustable to vary the cross section of said conductor receiving passage between said



transferse wall and said second body portion, and said bushing including means on said first body protion to secure the bushing within an aperture in said mounting member.

3,843,834

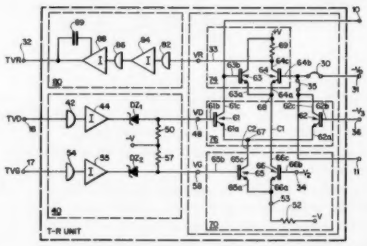
BIDIRECTIONAL LINE DRIVER-RECEIVER CIRCUIT

Nelson W. Burke, Stoneham, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 6, 1969, Ser. No. 863,807

Int. Cl. H04l *5/16*

U.S. Cl. 178—58 A **14 Claims**



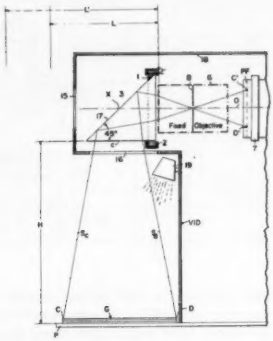
1. A data transmission line system for interconnecting a plurality of terminal devices through a two conductor line for communication, said system comprising: a plurality of transmit-receive elements, T-R1 through T-Rn, each element being coupled to a different one of said terminal devices for transmitting and receiving bilevel information between said one device and said line, said element having at least a pair of line terminals, each one of said line terminals being coupled to a different one of the conductors of said line, a data terminal TVD, for receiving a bilevel data input signal from said terminal device, a gate input terminal, TVG, for receiving a bilevel control switching signal from said device, and a receiver terminal, TVR, for passing a bilevel logic signal from said transmit-receive element to said device in response to information signals applied to said line terminals and each of said elements further including first and second amplifiers, said first amplifier having first and second inputs and at least one output, said second amplifier having an input and first and second outputs, said inputs respectively of said first amplifier being connected to said line terminals in common with said first and second outputs of said second amplifier, said output of said first amplifier being coupled to said receiver terminal, TVR, said data terminal, TVD, being coupled to said input of said second amplifier; a bias voltage source; means for connecting one of said conductors of said line to said source and the other of said conductors of said line to a reference potential; and, means for applying at least one bilevel logic switching signal to said first and second amplifiers from each of said TVG input terminals from said devices to define a transmit-receive mode of operation for each of said elements and said system.

3,843,835

OPTICAL SYSTEM FOR TAKING VIDEOTELEPHONE PICTURES AND THE LIKE

Virgilio Mosca, and Carmelo Solarino, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jan. 12, 1973, Ser. No. 323,270
Claims priority, application Italy, Jan. 17, 1972, 19446/72
Int. Cl. G02b 7/14
U.S. Cl. 178—7.92 8 Claims



1. In a television camera, in combination:
an image tube for converting optical images into electromagnetic signals;
a fixed objective optically aligned with said tube;
movable mounting means in front of said objective;
a miter prism on said mounting means having a base, a rear face proximal to said objective and perpendicular to the axis thereof, and a pair of symmetrically inclined side faces meeting at a ridge, the latter diverging forwardly from said rear face and sloping toward said base;
document-holding means forming a supporting surface parallel to and spaced from the axis of said objective, said base confronting said supporting surface and being parallel thereto in one operating position of said mounting means in which said ridge is intersected by an extension of said axis whereby pictorial matter on said supporting surface is projected in laterally nonreversed form upon a receiving surface of said image tube; and
supplemental lens means on said mounting means alignable with said objective in at least one other operating position thereof for the focusing of light rays from more remote objects upon said receiving surface.

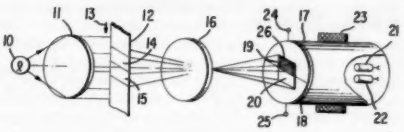
3,843,836

COLOR MOTION PICTURE FILM PLAYBACK SYSTEM

William James Hannan, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 250,021, May 3, 1912, abandoned.
Claims priority, application Great Britain, Mar. 17, 1972, 12696/72
This application June 28, 1973, Ser. No. 374,607
Int. Cl. H04n 9/04
U.S. Cl. 358—45 7 Claims

1. A system for producing signals representative of the color and brightness of images contained on an optical record, comprising:
an image conversion device including a split photosensitive electrode assembly including first and second portions having separate signal output terminals, means for scanning said split portions of said electrode assembly simultaneously with first and second electron beams, respectively; and
means for simultaneously imaging first and second successive frames of said record onto said first and second photosensitive electrode portions for producing during scanning a brightness representative signal obtained from



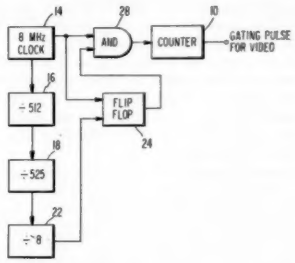
said signal output terminal of said second electrode portion and a color signal representative of said plurality of colors obtained from said signal output terminal of said first electrode portion.

3,843,837

APPARATUS FOR GENERATING SAMPLE PULSES IN A TELEPHONE IMAGE TRANSMISSION SYSTEM

Robert Sherman Hopkins, Jr., Lake Park, and David Martin Miller, Palm Beach Gardens, both of Fla., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 10, 1973, Ser. No. 387,346
Int. Cl. H04n 5/00
U.S. Cl. 178—7.1 5 Claims

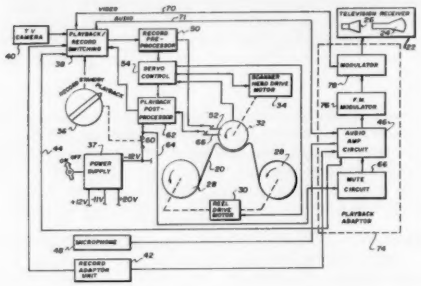


1. In a television image transmission system of the type wherein an audio communications link is employed to transmit a particular frame of television information to a remote receiver location, apparatus for generating sampling pulses to sequentially transmit said frame information column-by-column and row-by-row, comprising:
means for supplying a pulse train of given frequency;
means responsive to said pulse train for providing first pulses at a repetition rate determined by the number of columns of information elements into which said television frame is divided and by the number of rows of informational elements within each column;
means responsive to said first pulses for providing second pulses at a reduced repetition rate to substantially match with the bandwidth characteristics of said communications link; and
logic means actuated by said pulse train and by said second pulses to generate said output sampling pulses for said television information, said logic means including a flip-flop stage settable to a first conductive state by said second pulses and re-settable to a second conductive state by that cycle of pulse train information next succeeding it in time, said logic means further including a pulse counter operative to generate said sample pulses only during those time intervals during which said flip-flop stage is in said second conductive state.

3,843,838
MUTING CIRCUIT FOR VIDEO AND AUDIO PLAYBACK SYSTEM

Paul Victor Wanek, Mount Prospect, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,316
Int. Cl. G11b 5/00
U.S. Cl. 178—5.8 R **3 Claims**



1. In a television playback system having a recording medium for storing video and audio signals, signal coupling means for coupling video and audio signals to video and audio reproducer means, and switching means having a playback mode for causing said signal coupling means to couple the signals from the recording medium to the reproducer means and a different mode for effectively preventing the coupling of the signals from the recording medium to the reproducer means, the improvement comprising:

control means for generating on a control line a voltage having a first magnitude when said switching means is in the playback mode and a second magnitude when the switching means is in the different mode,

mute means for effectively disabling said signal coupling means including

a network coupled to said control line and responsive to a change in voltage from said first magnitude to said second magnitude for activating a disable means in said signal coupling means; and

time delay means effective after the lapse of a predetermined time period for disabling said mute means to thereby enable said signal coupling means,

said network means includes capacitor means forming a part of said time delay means, a semiconductor device forming said disable means and having a conducting or nonconducting state dependent on the charge on the capacitor means, and means for controlling the charge on the capacitor means by the magnitude of voltage on said control line, the time constant of the time delay means including said capacitor means controlling said predetermined time period.

3,843,839
GRAPHIC INDICIA VIDEO SIGNAL ACQUISITION TRANSMISSION AND REPRODUCTION SYSTEM

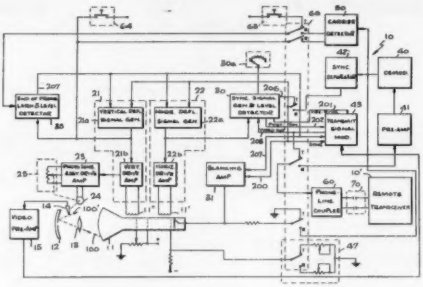
John Scott Campbell; John L. Fairchild, both of Pasadena, Calif.; Robert L. Lafond, San Antonio, Tex., and Carl R. Kolker, San Gabriel, Calif., assignors to Faxon Communications Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 219,249, Jan. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 875,364, Nov. 10, 1969. This application Dec. 4, 1972, Ser. No. 312,114
Int. Cl. H04n 1/12, 1/36, 1/42
U.S. Cl. 178—6 **39 Claims**

1. A flying spot scanning system for reading a graphic image contained on a motionless medium, said system comprising:

means for generating and sequentially scanning a spot of substantially constant intensity radiant energy over the surface of the medium to be read;

radiant energy sensitive means disposed in proximity to the medium to intercept the radiant energy as modified by the image for producing an output signal functionally related to the image; and

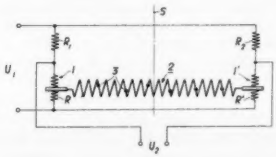


transport means coupled to said radiant energy sensitive means for moving said radiant energy sensitive means in synchronism with at least one motion component of said scanning spot, whereby said radiant energy sensitive means is caused to be positioned in close physical proximity with said scanning spot throughout a scan to assure that the output signal is uniformly related to the image.

3,843,840
ARTIFICIAL REVERBERATION DEVICE USING A DELAY ELEMENT WITH A LOCALLY INCONSTANT PROPAGATION PROPERTY

Werner Fidi, Baden, Austria, assignor to AKG Akustische und kino Gerate Gesellschaft mbH, Wien, Austria

Filed Mar. 21, 1973, Ser. No. 343,416
Claims priority, application Austria, Mar. 29, 1972, 2744/72
Int. Cl. H03h 9/30
U.S. Cl. 179—1 J **10 Claims**

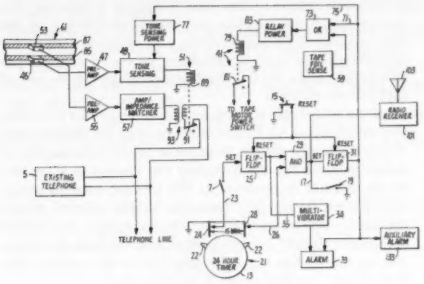


1. An artificial reverberation device comprising, in combination, two identical electromechanical transducer systems which are symmetrical with each other; a delay element mechanically interconnecting said identical transducer systems and having a locally inconstant propagation property; and a differential circuit arrangement incorporating said identical transducer systems and having a signal input and a signal output; said transducer systems being electrically connected in identical manners to said signal input, whereby said signal output provides an output signal corresponding to the difference between the electromotive forces arising in said transducer systems due to their mechanical interconnection by said delay element.

3,843,841
REMOTELY ACTUATED AUTOMATIC TELEPHONE CARE SYSTEM

Morton K. Rubinstein, Los Angeles, Calif., assignor to Herbert J. Rubinstein, Los Gatos, Calif., a part interest

Filed May 8, 1973, Ser. No. 358,352
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P 8 Claims



1. An automatic telephone care device system for automatically transmitting a message without any physical action by a human operator comprising:

a base unit means for dialing a predetermined telephone number to transmit a prerecorded message in response to a received radio signal,

remote unit means including

means for cyclically generating an alarm signal at predetermined time intervals,

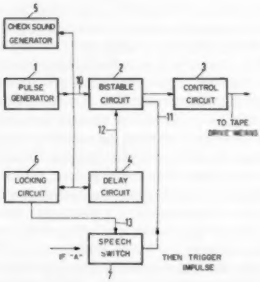
switch means actuatable by a human operator for terminating said alarm,

means for transmitting said radio signal when said switch means is not actuated within a predetermined time period after initiation of said alarm signal.

3,843,842
REMOTE REWIND CONTROL SYSTEM

Willy Muller, Guggerstrabe 13, 8702 Zollikon/Zurich, Germany

Filed July 10, 1972, Ser. No. 270,326
Claims priority, application Germany, July 13, 1971, 2134927
Int. Cl. H04m *11/10*
U.S. Cl. 179—6 E 10 Claims

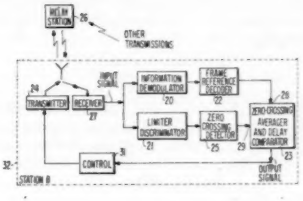


1. In a method for remote rewind control from an interrogating station in the remote interrogation of information recorded in memory means via a transmission channel, more particularly in the remote reproduction of voice recordings in an automatic telephone answering device via a telephone line, the information transmission and the control of the playback and the rewind operation occurring via the same transmission channel the improvement that the playback operation is stopped at regular intervals for a preset time which is short in relation to said intervals between successive stoppages and that at these points in time a check signal, preferably a check signal lying in the audio range, is transmitted to interrogating station, as an invitation for the transmission of a rewinding command if a rewind movement is desired, and that a detector device which responds to a rewind command signal from the interrogating station, more particularly a previously agreed to speech sound of the interrogator, which may be received from the interrogating station following the transmission of the check signal to the interrogating station, the detector circuit being more particularly a speech switch responding to the speech sound agreed to as a rewind command signal, is being gated sensitive simultaneously with and during the preset stoppage on transmission of a rewind command signal produces an operating signal for rewind drive, while if no such rewind command signal is received the playback operation is continued after the short stop.

3,843,843
A TIME DIVISION MULTIPLE ACCESS SYNCHRONIZATION TECHNIQUE

Karl Solomon, Haddonfield, and John Ross Allen, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,897
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS 8 Claims



1. In a time division multiple access communication system having plural transmitting stations each assigned a time slot within a predetermined time frame for transmitting information signals at a predetermined frequency and power level to a relay station for relaying said signals to said system stations, a method for a new transmitting station to gain access to said communication system for transmitting information bursts to said relay station within a desired time slot without interfering with said information signals transmitted by said plural stations comprising the steps of:

transmitting from said new station to said relay station a predetermined number of frequency shift modulated narrow band accessing signals repetitive at the communication system frame rate and having a power level substantially lower than said predetermined power level at frequencies located within the spectral null of said information signals of said other stations,

detecting at said new station said accessing signals and said information signals relayed by said relay station,

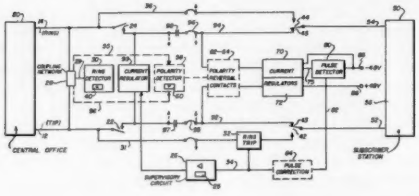
comparing at said new station the position of said relayed accessing signals within said system time frame relative to said relayed information signals, and

controlling the time of transmission of said accessing signals to correspond to said desired time slot within said system time frame.

3,843,844
SUBSCRIBER LOOP CIRCUIT APPARATUS

Albert Schumperli, Guelph, Ontario, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,398
Claims priority, application Canada, June 4, 1971, 114862
Int. Cl. H04m 1/76; H04q 1/30
U.S. Cl. 179—16 F 3 Claims

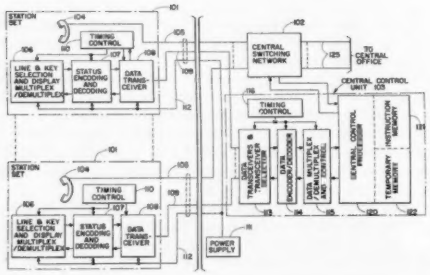


1. Circuit apparatus for improving both signalling and voice transmission characteristics on a two-lead line between a subscribers loop and a central office comprising a current regulating network associated with each lead of said line, means responsive to closure of said line loop for connecting each regulating network to the associated line lead, means for sensing the voltage at the output of one current regulating network from its connected line lead, means responsive to a low voltage condition sensed by said one regulating network for connecting a voice frequency repeater to said line leads, and wherein there is a normally open ringing path in parallel with a portion of said line leads, and means for closing said ringing path responsive to ringing directed toward said subscriber loop to bypass said repeater, said sensing means and said regulating networks from said line loop during the continuation of ringing.

3,843,845
ELECTRONIC KEY TELEPHONE SYSTEM

Peter Ridley, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Sept. 11, 1972, Ser. No. 288,095
Int. Cl. H04m 1/00
U.S. Cl. 179—99 5 Claims



1. A key telephone system for connection to a plurality of telephone lines, comprising:

a plurality of telephone stations each including line selectors corresponding to individual ones of said lines;

central switching means and central control means;

each of the telephone stations being connected to the central switching means by a single communication path and also being connected to the central control means by a single data path;

said central control means including means for periodically transmitting over each of the single data paths an information to follow address or an information request address to a selected one of the telephone stations;

said central control means including means responsive to said information to follow address for transmitting central control status information to the selected station, and means responsive to said information request address for receiving station status information from the selected station via said single data path;

said central control means also including a memory for storing status information and means responsive to the station status information from said selected station for controlling said central switching means to connect the communications path of said selected station to one of said telephone lines;

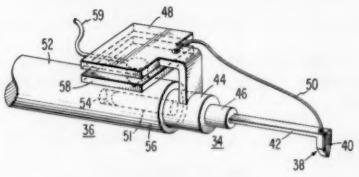
each of the telephone stations including means for decoding the information to follow address and the information request address, means responsive to the information to follow address for conditioning the station in a receive mode, means responsive to the central control status information transmitted from the central control means for displaying the status at the selected station, and means responsive to said information request address for transmitting the station status information to the central control means over the single data path; and

each of the telephone stations also including a switch hook independent of the communication path; and means responsive to the switch hook for transmitting the station status information to the central control means.

3,843,846
DEMOUNTABLE CAPACITIVE PROTECTIVE COUPLING FOR PICKUP TRANSDUCERS

Michael Evans Miller, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,727
Int. Cl. H04r 19/06; G11b 9/06
U.S. Cl. 179—100.4 M 4 Claims



1. In a system for effecting playback of a disc record having geometrical variations in spiral groove form on a major surface thereof, the combination comprising: an arm pivotally mounted at one end thereof, a stylus assembly including a conductive stylus electrode adapted for entry in said record groove; a first conductive member secured to an end of said arm remote from said one end; signal processing means electrically coupled between said first conductive member and a point of reference potential; a second conductive member secured to a segment of said stylus assembly remote from said stylus electrode and electrically coupled to said stylus electrode; said stylus assembly segment and said remote end of said arm subject to mechanical engagement in an operating relationship providing support for said stylus assembly by said arm during record playback, and subject to manual release from said engagement for facile disassembly of said arm and said stylus assembly; the mechanical engagement of said stylus assembly segment and said remote arm end in said operating relationship effecting a juxtaposition of said conductive members in a substantially parallel relationship of substantially fixed spacing; an electrical coupling of a direct current blocking character being provided between said stylus electrode

and said signal processing means during record playback by a capacitance of substantially fixed value established between said conductive members, said coupling being provided without hindrance to said disassembly.

3,843,847

COMBINATION AUTOMOBILE RADIO AND CASSETTE TAPE RECORDER

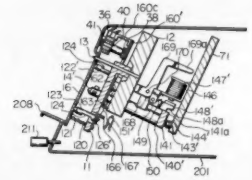
Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 98,714, Dec. 16, 1970, Pat. No. 3,768,814. This application Aug. 22, 1973, Ser. No. 390,586

Claims priority, application Japan, Dec. 18, 1969, 44-101508; Dec. 18, 1969, 44-101509; Mar. 20, 1970, 45-26595; Mar. 20, 1970, 45-26596

Int. Cl. G11b *31/00, 15/32, 5/54*

U.S. Cl. 179—100.11 **6 Claims**



1. In a combination of an automobile radio and cassette tape recorder, said radio and recorder having a common casing including a front panel, said panel carrying operating knobs for said radio and being formed with an aperture for receiving a tape cassette having a first wall formed with openings for receiving magnetic heads and a pinch roller of the tape recorder, openings in at least one second wall transverse to said first wall for receiving tape reel driving shafts and a capstan, and guide holes in said at least one second wall for receiving latching guide pins of the tape recorder, the improvement which comprises:

a. a base plate carrying said tape reel driving shafts and said capstan, said base plate being inwardly offset in said casing from said front panel;

b. a flywheel operatively connected to said capstan for rotation of said flywheel with said capstan;

c. a cassette loading plate mounted on said base plate for movement parallel to the axes of said tape reel driving shafts and said capstan,

1. said cassette loading plate extending in a plane transverse to said axes;

d. spring means operatively interposed between said cassette loading plate and said base plate for biasing said cassette loading plate away from an operative position adjacent said base plate and in a direction outward of said casing through said aperture;

e. latching guide pins mounted on said base plate for engaging said guide holes in a cassette loaded on said cassette loading plate when the cassette is moved inwardly of said casing together with said cassette loading plate, and for releasably latching said cassette in the operative position of said cassette loading plate while said tape reel driving shafts and said capstan respectively engage tape reels and a tape in said cassette;

f. a lever member carrying said magnetic heads and said pinch roller;

g. pivot means connecting said lever member to said base plate for movement of said magnetic heads and said pinch roller transversely to the direction of movement of said cassette loading plate toward and away from said openings in said first wall; and

h. means coupling said cassette loading plate to said lever member for moving the lever member in timed sequence with the movement of the cassette loading plate, and for thereby causing said magnetic heads and said pinch roller to be received in said openings in the first wall of a cassette loaded on said cassette loading plate when the latter enters said operative position thereof.

3,843,848

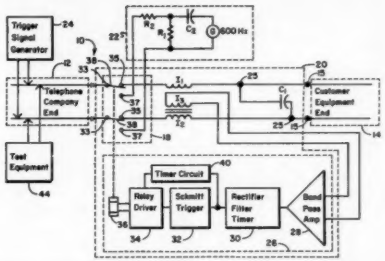
TELEPHONE LOOPTEST SYSTEM

Russell G. Cox, Bloomington, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Jan. 12, 1973, Ser. No. 323,140

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 R **14 Claims**



1. In apparatus for remote testing of the condition of a telephone communication line which comprises a pair of conductors to the interface connection point to customer equipment in which apparatus there is an electrical impedance of given value at the interface connection point, switch means responsive to a trigger signal on the telephone communication line changeable in response to the trigger signal from a first condition in which the customer's equipment is normally connected to the communication line to a second condition in which the given electrical impedance is connected thereto for a given length of time, and means for testing the condition of the telephone line with a given electrical impedance connected thereto, the improvement comprising:

means for applying an alternating current trigger signal to the line for at least a predetermined period of time;

and inductive sensing means connected in series between a first and second section of one of the conductors responsive to the presence of the alternating current trigger signal for said predetermined period of time for operating the switch means independently of the condition of any equipment beyond the point of interface connection when the switch means is in its first condition.

3,843,849

MULTIPLE STAGE TELECOMMUNICATIONS SWITCHING NETWORK

Nikola Ljotic Jovic, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

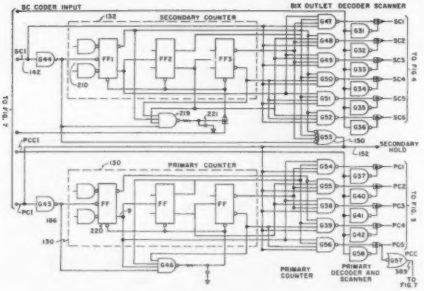
Filed June 20, 1972, Ser. No. 264,568

Int. Cl. H04q *3/50*

U.S. Cl. 179—18 FG **9 Claims**

1. A switching network including a plurality of cascaded stages, means for automatically completing a path through said stages from an input circuit requesting service to a network output circuit, each of said stages comprising at least one matrix, each of said matrices comprising a plurality of intersecting input and output multiples, means for coupling output multiples of preceding stages to the input multiples of succeeding stages to cascade said network, crosspoint elements positioned at the intersections of each input and output multi-

ples to comprise said matrices, said crosspoint elements capable of being switched from a non-conducting state to a conducting state to interconnect said intersecting multiples in the conducting state, the invention comprising a control circuit connected to the output multiple conductors of said plurality of stages, said control circuit comprising means normally inhibiting the crosspoint elements of a plurality of said stages to prevent said inhibited crosspoint elements from switching to the conducting state, said control circuit further comprising enabling means for successively enabling crosspoint elements of the output multiple conductors in the stage to which said control circuit is connected to enable successive crosspoint



elements coupled between said input circuit requesting service and said enabled output multiple, and means for applying second signals to the output multiples of switched crosspoint elements for holding an operated crosspoint element in the conducting condition wherein said enabling means are operative during successive time intervals to switch a different crosspoint element during each of said intervals and wherein there are second enabling means operative during each interval to successively enable output multiple conductors of said second stage to switch crosspoint elements in a second stage of said network which are connected to the output conductor of a switched crosspoint element of said one stage and the enabled output multiple conductor of said second stage.

3,843,850

FOUR CHANNEL RECORD REPRODUCING APPARATUS WITH MUTING OF SPEAKERS NOT USED FOR STEREO OR MONAURAL RECORDS

Nobuaki Takahashi, Yamato-City; Katsuhiro Ohnuki, Tokyo; Yoshitoshi Fujita, Fujisawa-City, and Yasuo Itoh, Tokyo, all of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

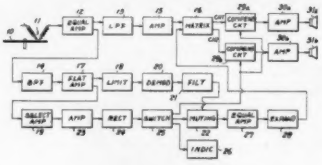
Filed June 23, 1971, Ser. No. 155,760

Claims priority, application Japan, June 26, 1970, 45-63190[U]; July 5, 1970, 45-66596[U]; May 22, 1971, 45-41555[U]; July 5, 1970, 45-58312; Sept. 1, 1970, 45-75971

Int. Cl. G11b *3/00, 3/78*

U.S. Cl. 179—100.4 ST **9 Claims**

1. A phonograph record reproducing apparatus for interchangeably playing back monaural, stereo and four channel records, said monaural record having an unmodulated signal recorded in a single groove thereof, said stereo records having two unmodulated signals respectively recorded on two side walls of a single groove thereof, said four channel records having two multiplex signals respectively recorded on two side walls of a single groove thereof, one of the two multiplex signals including one unmodulated sum signal combining first and second of the four channel signals and one modulated signal paired therewith wherein a carrier signal is modulated responsive to a difference signal combining the first and second channel signals, the other of the two multiplex signals including another unmodulated sum signal combining third and fourth of the four channel signals and another modulated signal paired therewith wherein the carrier signal is modulated responsive to a difference signal combinig the third and fourth channel signals; said reproducing apparatus including two signal processing means each of which processes an associated one of the two multiplex signals, each of said signal processing means comprising separator means for separating the unmodulated sum signal and the paired modulated signal from the associated multiplex signal; demodulator means for demodulating the paired modulated signal separated by said separator means; detector means for detecting the carrier component of the paired modulated signal separated by said separator means; control signal generator means for rectifying the carrier component detected by said detector means to produce a control signal; muting circuit means connected to the output circuit of said demodulator means, means responsive to the control signal having a level exceeding a predetermined level for selectively causing the muting circuit means to pass the output signal of said demodulator means, and mean responsive to the control signal having a level below the predetermined level for selectively causing the muting circuit means to interrupt the output signal of said demodulator means; matrix circuit means responsive to the output signal of said muting circuit means and the unmodulated sum signal separated by said separator means for individually providing the two channel signals paired with the demodulated signal in the associated multiplex signal.



3,843,851

A RIGID COMPACT ELECTRONIC COMPUTER

Yuji Harada, and Akihiko Yoshizawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,453

Claims priority, application Japan, Sept. 17, 1971, 46-84768

Int. Cl. H01h *3/12*

U.S. Cl. 200—5 E **8 Claims**

1. A compact electronic computer comprising:

a keyboard assembly including a plurality of key tops for entering inputs of numerical data and execution orders, an outer panel having a plurality of openings at positions corresponding to said plurality of key tops fitted therein, a plurality of switches each of which is disposed below each of said key tops fitted in the openings of said outer panel and being operated by the depression of a corresponding key top, a first printed circuit panel for introducing electric signals generated by said switches into said computer, and a support plate supporting thereon said first printed circuit panel;

a second printed circuit panel having arranged thereon a plurality of operation elements and forming electric connections between said operation elements;

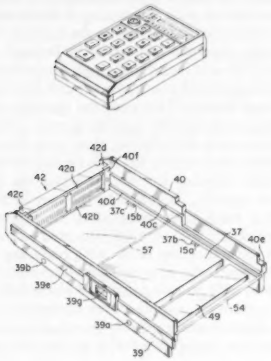
a pair of slide plates, each of which includes a first supporting portion supporting said support plate and is provided with a first groove guiding and supporting said second printed circuit panel;

a multijack including a first retaining portion retaining said pair of side plates parallel and a first connecting portion

electrically connecting said first printed circuit panel to said second printed circuit panel;

first fixing means for fixing said multijack and said pair of side plates at said first retaining portion, and

second fixing means for fixing said support plate and said pair of side plates at said first supporting portion.



3,843,852

MULTIPLE POSITION SLIDE SWITCH ASSEMBLY WITH AUXILIARY SWITCH DEACTIVATED BY CONTROLLER IN EXTREME POSITION

Joseph L. Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 257,584, May 30, 1972, abandoned. This application May 7, 1973, Ser. No. 357,980

Int. Cl. H01h *15/08*

U.S. Cl. 200—16 D **17 Claims**

1. A multiple position slide switch, comprising:

a housing,

a plurality of opposed pairs of electrical contacts mounted in spaced relationship in said housing and defining a space extending between each of the opposed pairs of said contacts,

a first electrically conducting connector element mounted on said housing and normally engaging at least two of said contacts to define a normally completed first circuit path therebetween,

the remaining contacts being maintained in spaced relationship to define a plurality of normally interrupted circuit paths,

a cover covering said housing and enclosing upper portions of said contacts within said housing,

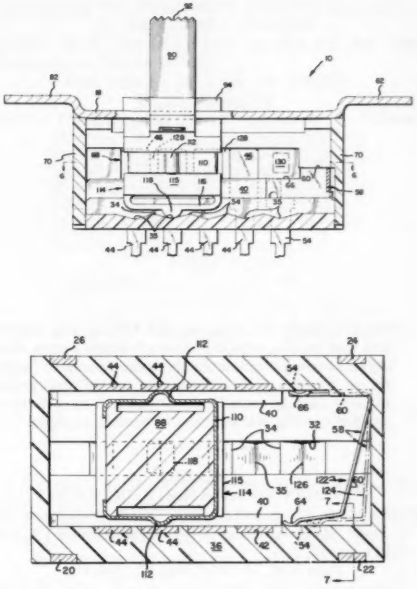
lower portions of said contacts protruding externally of said housing for electrical connection externally of said housing,

a carriage in said housing displaceable along said space extending between the opposed pairs of said contacts,

a second electrically conducting connector element mounted on said carriage for displacement therewith, said carriage in a first position engaging said first connector element and thereby disengaging said first connector element from at least one of said two contacts to interrupt said first circuit path,

said carriage being displaceable along said defined space and thereby being disengageable from said first connector element to allow said first connector element to engage said two contacts and complete said first circuit path,

said carriage being displaceable for registration in turn in a plurality of positions along said defined space to engage said second connector element in turn with selected pairs of said remaining contacts to complete in turn said plurality of normally interrupted circuit paths.



3,843,853

ELECTRICAL CONNECTOR WITH SWITCH AND LATCH MEANS THEREFORE

George J. Panek, and Edward G. Dubell, both of Phoenix, Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,108

Int. Cl. H01h *13/50*

U.S. Cl. 200—51.09 **19 Claims**

1. A switching electrical connector comprising:

a shell having a bore therein;

fixed and axially movable insulators positioned in said bore, said movable insulator being movable between a first position adjacent to said fixed insulator and a second position spaced from said fixed insulator;

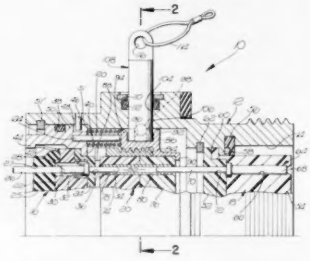
a pair of complementary axially aligned contacts mounted in said insulators, respectively, and adapted to complete an electrical circuit through the connector when one contact is engaged with the other, said contacts being engaged when said movable insulator is in said first position and being disengaged when said movable insulator is in said second position;

an annular groove in the wall of said bore;

a radially contractible locking ring carried by said movable insulator and being engaged with said groove when said movable insulator is positioned in said first position, whereby said locking ring retains said movable insulator in said first position;

means biasing said movable insulator toward said second position thereof;

cam surface means between said locking ring and said groove for causing said locking ring to contract, under the force of said biasing means, out of said groove; and



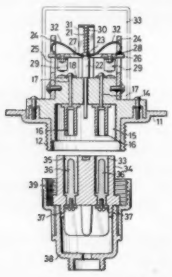
releasable means for retaining said locking ring engaged with said groove, release of said releasable means allowing said biasing means and cam surface means to cooperate to contract said locking ring out of said groove, whereby said movable insulator will shift to said second position causing said contacts to become engaged.

3,843,854

SWITCH-INCORPORATING PLUG SOCKET

Shinjiro Mori, Tokyo, and Akitoshi Takada, Yokohama, both of Japan, assignors to Mori Denki Manufacturing Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1973, Ser. No. 400,119
Claims priority, application Japan, May 23, 1973, 48-56706
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **2 Claims**



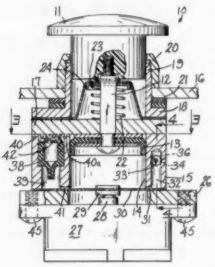
1. A switch-incorporated plug socket comprising a socket having a main body provided with a tapped sleeve, a mount of electrically insulating material fixed to the main body on the opposite side to said tapped sleeve, a plurality of plug receiving members fixed to one end of said mount within said tapped sleeve and respectively opening in the same direction as the direction in which said tapped sleeve is open, metal strips fixed on said mount and electrically connected with said plug receiving members respectively, terminal plates fixed on said mount at locations opposite to said metal strips respectively, a guide rod slidably extending through the center of said mount in parallel to the plug receiving members with one end thereof protruding into said tapped sleeve, said guide rod being enlarged in diameter at the central portion thereof and formed with an annular groove at said enlarged diameter portion perpendicular to the axis thereof, side plates fixed in opposed relation to the opposite side walls of said mount parallel to said metal strips and terminal plates with portions thereof projecting above said mount, a pressing plate of electrically insulating material disposed horizontally with the opposite ends thereof respectively received in openings formed in said side plates, said pressing plate being provided at the central portion with an opening in which said guide rod is extended, contactor strips fixed to the opposite end portions of said pressing plate and adapted to be brought into contact concurrently with said metal strips and terminal plates, means for urging said guide rod constantly towards the tapped sleeve, and leaf springs mounted between the opposite end portions of the pressing plate and the annular groove of the guide rod and adapted to move the pressing plate away from the mount when the guide rod is moved towards the tapped sleeve and to move the same towards the mount when the guide rod is moved in the opposite direction to the tapped sleeve; and a plug having a main body adapted to be inserted into the tapped sleeve of said socket, plugs provided on the main body and adapted to be received in the plug receiving members of said socket respectively, terminals provided on the main body on the opposite side to said plugs and electrically connected therewith respectively, a plug cover connected to the main body and a plug union threadably mounted around said plug cover for meshing engagement with the tapped sleeve of said socket.

3,843,855

ANTI-HOLDDOWN DEVICE WITH DIAPHRAGM ACTUATING SWITCH AND PISTON

John H. Danielson, 25 Viking St., East Haven, Conn. 06512

Continuation-in-part of Ser. No. 276,886, July 31, 1972, abandoned. This application May 21, 1973, Ser. No. 361,881
Int. Cl. H01h *35/34, 35/38*
U.S. Cl. 200—83 J **9 Claims**

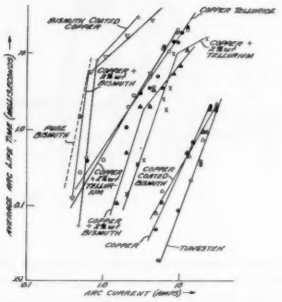


1. An anti-holddown switching device comprising a housing member defining a pressure chamber having opposite ends, a flexible diaphragm closing said chamber at one end thereof, a switch disposed adjacent said diaphragm at said one end of said chamber and operable by said diaphragm when the pressure on said diaphragm reaches a predetermined value, a piston in said chamber adjacent the other end thereof and movable in a direction to decrease the volume of said chamber between said piston and said diaphragm and increase the pressure therein, a passage defined in said housing member by which pressure in said chamber between said piston and said diaphragm is bled therefrom, whereby pressure created in said chamber by said piston is reduced and said diaphragm releases said switch after a predetermined time independent of the position of said piston in said chamber.

3,843,856
CONTACT FOR A VACUUM SWITCH OF SINGLE PHASE ALLOY

Edward A. Attia, San Jose, Calif., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 4, 1973, Ser. No. 366,868
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **3 Claims**



1. In a vacuum type circuit interrupter having an evacuated sealed envelope;

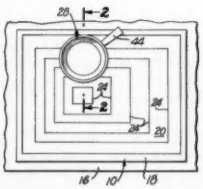
a pair of contacts supported by said envelope for relative movement into and out of engagement;

at least one of said contacts having cirucit making and breaking regions formed of Copper Telluride wherein the Tellurium concentration is at least 50 percent by weight and not more than 52 percent by weight, and the balance Copper.

3,843,857
INDUCTION HEATING SYSTEM PRIMARILY INTENDED FOR COOKING USE

Ronald J. Cunningham, 626 Sonora, Glendale, Calif. 91201

Continuation-in-part of Ser. No. 257,203, May 26, 1972, abandoned, and a continuation-in-part of Ser. No. 294,218, Oct. 2, 1972. This application Jan. 22, 1973, Ser. No. 325,612
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **8 Claims**



1. A stove top to be used in induction heating of a utensil employed in domestic cooking which is at least partially ferromagnetic in character which comprises:

a flat, self-supporting, electrically non-conductive and non-ferromagnetic member serving as a stove top, said member having an imporous upper surface and having a lower surface,

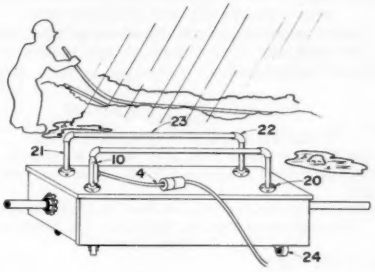
a flat induction coil located along and adjacent to said lower surface, said induction coil consisting of a single conductor, the thickness of said coil being the thickness of said conductor,

said lower surface including a groove corresponding to the configuration of said conductor of said induction coil, said conductor of said induction coil being located within said groove.

3,843,858
PORTABLE WEATHERPROOF HEATING UNIT FOR SOFTENING PVC CONDUIT

Donald D. Buell, Casa De Emdeko, Apt. 321 P.O. Box 1840, Kailua-Kona, Hawaii 96740

Filed Sept. 14, 1973, Ser. No. 397,423
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.49 **5 Claims**



1. A portable weatherproof heating unit for softening rigid plastic tubing comprising:

a. a hollow electrical induction heater having both ends open, and including induction heater coil means,

b. a rigid housing surrounding said hollow induction heater in spaced relationship therewith including an opening at each end concentric to said hollow induction heater,

c. means to support said hollow induction heater within said surrounding housing,

d. means to allow linear and diametrical expansion of said hollow heater within said supporting means,

e. an electrical appliance input, connection,

f. means to electrically connect the ends of the heater coil to the electrical appliance input connection, and

g. means to attach said appliance input connection to said housing.

3,843,859
MICROWAVE OVEN DOOR ASSEMBLY

Eldon J. Klemp, Mayer, and Vernon E. Cassibo, New Hope, both of Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 292,529, Sept. 27, 1972, abandoned. This application July 26, 1973, Ser. No. 382,910
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **3 Claims**

1. A door assembly for sealing the opening of a microwave oven cavity, the cavity opening extending through the front face of the oven, comprising:

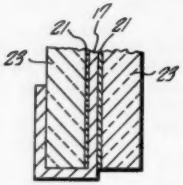
a relatively thin sheet of self-supporting, shatterproof metal 20 thousandths of an inch thick extending in a plane over the entire opening of the oven cavity and over the front face of the oven forming said opening:

a glass panel coextensive with said sheet of metal on the side of said sheet opposite the front face of the oven;

a second panel of non-metal material coextensive with and bonded to said sheet on the side of said sheet facing the front face of the oven, said panel completely extending over the opening of the oven cavity and over the front face of the oven forming said opening; and

a first quantity of adhesive material located about the pe-

riphery of said glass panel bonding said glass panel to said sheet of metal, and a second quantity of adhesive material



located about the periphery of said second panel bonding said second panel to said sheet of metal to form an integral laminated door.

3,843,860

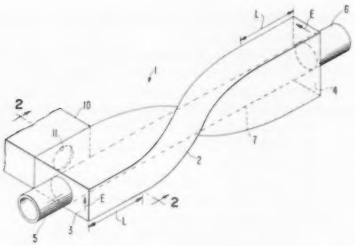
TWISTED MICROWAVE APPLICATOR

Howard R. Jory, Menlo Park, and Charles H. Will, Jr., San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 208,768, Dec. 16, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,676

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **14 Claims**



1. An electromagnetic energy applicator comprising a waveguide section elongate about an axis and having electromagnetic energy input means connected thereto, said waveguide section having two rectangular end walls with openings therein for passage of an object along a path through said waveguide section, said end walls being substantially opague to said electromagnetic energy, said waveguide section being configured so that the longer rectangular dimension of one of said end walls is nonparallel to the longer rectangular dimension of the other of said end walls, said waveguide section being further configured so that as said object passes along said path from said one end wall to said other end wall said object is exposed for the greater portion of said path to a continuously varying orientation of the electric field of said electromagnetic energy.

3,843,861

WAVE GUIDE CHANNEL OPERATING WITH MICRO-WAVE ENERGY

Cornelis Johannes Maria Van Amsterdam, Viersen, Germany, assignor to Firma Johannes Menschner, Textilmaschinenfabrik, Dulken, Germany

Continuation of Ser. No. 140,057, May 4, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,440

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **5 Claims**

1. An arrangement for heat treatment of material, comprising

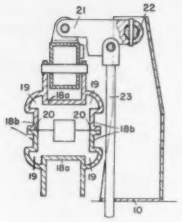
a waveguide channel including a boundary wall,

a source of microwave energy,

means for applying the microwave energy to said waveguide channel, and

means for passing said material through said waveguide channel,

said waveguide channel further comprising



electrically conductive means forming an integral part of said boundary wall of said waveguide channel, projecting from said wall into the interior of said waveguide channel and extending throughout the length thereof for concentrating the microwave energy substantially uniformly upon said material throughout the length of said waveguide channel.

3,843,862

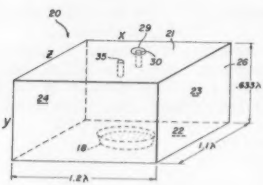
MICROWAVE OVEN HAVING TM AND TE MODES

James E. Staats, and Louis H. Fitzmayer, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 4, 1974, Ser. No. 430,731

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **5 Claims**

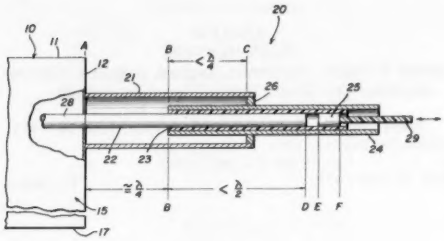


1. Electronic heating apparatus for heating a low impedance body, said apparatus comprising a metal enclosure in the form of a rectangular parallelepiped including a top wall, a bottom wall, a front wall, a rear wall and two opposed side walls defining a heating cavity for receiving therein a body to be heated, source means including a probe antenna electrically coupled to said heating cavity along said top wall for transmitting microwave energy of a predetermined wavelength λ into said heating cavity to excite therein two predetermined electromagnetic field modes, said heating cavity having an electrical width substantially equal to 1.2 λ and an electrical height substantially equal to 0.633 λ and an electrical depth substantially equal to 1.1 λ, and tuning means disposed in said heating cavity adjacent to the top thereof, one of said predetermined electromagnetic field modes being a relatively low impedance transverse magnetic field mode, the other of said predetermined electromagnetic field modes being a relatively high impedance transverse electric field mode having a relatively low impedance region generally centrally of said heating cavity, whereby there is established in said heating cavity an electromagnetic field pattern providing uniform heating of an associated low impedance body.

3,843,863
IMPEDANCE VARYING DEVICE FOR MICROWAVE OVEN

Louis H. Fitzmayer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 24, 1974, Ser. No. 436,027
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 15 Claims

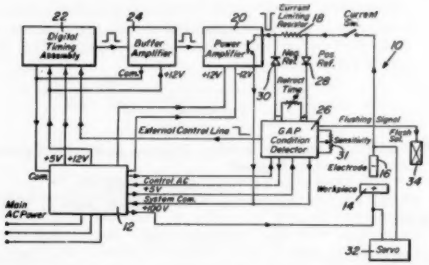


1. In a microwave oven for heating a body with microwave energy of a predetermined wavelength, the combination comprising metal wall structure defining a heating cavity for receiving therein the associated body to be heated, source means for transmitting microwave energy of the predetermined wavelength into said heating cavity, of coaxial transmission line section coupled to said heating cavity, and a conductive member disposed in said coaxial transmission line section and movable with respect thereto between first and second positions, said conductive member in the first position thereof producing across said coaxial transmission line section at said heating cavity an effective electrical open circuit, said conductive member in the second position thereof producing across said coaxial transmission line section at said heating cavity an effective electrical short circuit, whereby the impedance of said coaxial transmission line section and thereby the field distribution in said heating cavity may selectively be varied.

3,843,864
GAP CONDITION DETECTOR CIRCUIT

Leonard M. Wohlabaugh, Miller Place, N.Y., assignor to Eltec Pulsitron, West Caldwell, N.J.

Filed Mar. 21, 1973, Ser. No. 343,484
Int. Cl. B23k 9/16
U.S. Cl. 219—69 C 5 Claims

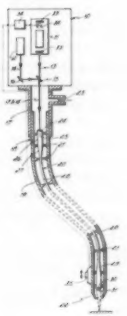


1. In an electrical discharge machining apparatus, a power supply connected across the gap between a workpiece and an electrode by a power switch conducting current pulses to the electrode, means for interrupting said current pulses in response to excessive current flow through the gap, comprising current limiting means connected in series to the gap and the power switch, means for monitoring the volt drop across the current limiting means, reference voltage means for establishing a reference voltage, comparison means connected to said reference voltage means and the monitoring means for detecting a volt drop exceeding said reference voltage to produce an operating signal, and means connected to the comparison means and the power switch for disabling the power supply in response to said operating signal.

3,843,865
DEVICE FOR MATERIAL WORKING BY A LASER BEAM, AND METHOD FOR ITS PRODUCTION

Gunther Nath, Speyerstr. 21, Munich, Germany

Filed Sept. 13, 1972, Ser. No. 288,726
Claims priority, application Germany, Sept. 14, 1971, 2145921
Int. Cl. B23k 27/00; G02b 5/14
U.S. Cl. 219—121 L 28 Claims



1. A device for material processing by a laser beam of the type having a flexible light guide for directing the laser beam, said device comprising:

a single homogeneous unclad quartz rod having

1. a beam entrance face positioned to intersect the beam of light generated by a laser and having a diameter approximately equal to the diameter of the laser beam,
2. a long, flexible fiberlike portion with a diameter substantially smaller than the diameter of said beam entrance face, and a length substantially larger than its diameter,
3. a portion of continuously decreasing diameter extending from said entrance face to one end of said fiberlike portion,
4. a beam exit face of greater diameter than the diameter of said fiberlike portion,
5. a portion of continuously increasing diameter extending from the other end of said fiberlike portion to said beam exit face; a flexible tubing for protectably enclosing said quartz rod; and

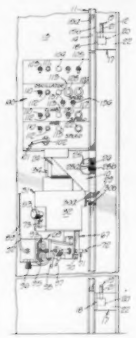
a plurality of spacers disposed within said tubing and positioned along the length of said quartz rod, each said spacers having an aperture through which said rod passes, each said spacer being coated with a material having an index of refraction less than said quartz rod, said spacers preventing contact of said rod with said tubing when said tubing is bent.

3,843,866

AUTOMATIC FILLET AND BUTT WELDING APPARATUS

Milo M. Kensrue, 11031 Cherryhill Dr., Santa Ana, Calif. 92705

Filed Oct. 2, 1972, Ser. No. 293,852
Int. Cl. B23k 9/12
U.S. Cl. 219—124 10 Claims



1. Welding apparatus operable to provide a continuous weld along a weld joint axis between adjacent surfaces having converging relation on a plane at a rightangle to the weld joint axis, comprising:

a. a power drive carriage structure;

b. means supporting said carriage structure for guided movement along said joint axis;

c. a welding torch mounted on said carriage structure and being movable therewith along the joint axis including a welding tip; and

d. mechanism for oscillating the welding tip in successively reversed paths of movement transversely of the joint axis, while moving said carriage along said joint axis, said mechanism comprising:

a guide arm pivoted at one end for swinging movement;

a head frame supporting said torch and being slidable in a linear path on said guide arm;

a spring normally urging the head frame and torch towards a limit position of movement at the free end of the guide arm; and

means operable in response to oscillatory swinging movement of said guide arm and coacting with said spring to vary the position of said head frame on said guide arm in a manner such that the combined oscillatory and linear movement of the head frame will conform the tip oscillating movement to a V-path.

3,843,867

PROCESS FOR OUT-OF-POSITION WELDING

Donald C. Helton, York, and Robert C. Steveling, Hanover, both of Pa., assignors to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 257,395, May 26, 1972, Pat. No. 3,800,120. This application Oct. 4, 1973, Ser. No. 403,662
Int. Cl. B23k 35/22
U.S. Cl. 219—137 8 Claims

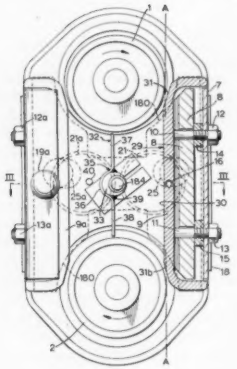
1. A process for electric arc welding which comprises establishing an electric arc between work and an electrode, said electrode having a sheath which comprises from about 70 percent to about 90 percent by weight of the electrode and containing a core, said core comprising by weight of the core a granulated mixture of from about 25 percent to about 55 percent titanium dioxide, from about 10 percent to about 20 percent ferro silicon, from about 10 percent to about 25 percent ferro manganese and from about 10 percent to about 30 percent of a fused material, said fused material comprising by weight of the fused material about 15 percent sodium oxide, about 47 percent titanium dioxide, about 22 percent manganese dioxide and about 15 percent silicon dioxide, surrounding the arc with an atmosphere of protective gas, advancing the electrode into the arc while maintaining electrical contact with the exterior of the electrode, and relatively moving the arc with respect to the work.

3,843,868

YARN HEATERS

Harold Whittaker, Manchester, England, assignor to Carding Specialists Co. Limited, Halifax, Yorkshire, England

Filed May 31, 1972, Ser. No. 258,330
Claims priority, application Great Britain, June 18, 1971, 28646/71; Dec. 10, 1971, 57484/71
Int. Cl. H05b 1/02
U.S. Cl. 219—470 11 Claims



1. A yarn heater comprising:

a. two rollers mounted on spaced substantially parallel shafts;

b. bearings located in a housing and supporting said shafts;

c. two heating members extending longitudinally on opposite sides of the space between said rollers and having heating surfaces facing into the space between the rollers; and

d. a slideway for each heating member, each slideway being located on the housing and extending transversely to the shafts of the rollers so that the respective heating member may slide between a first position immediately adjacent to the space between the rollers and a second position removed from said space.

3,843,869

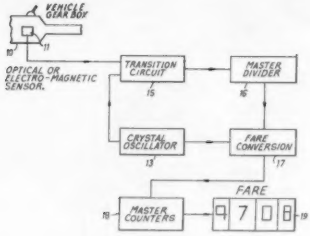
TAXIMETERS

Michael John Craddock, Kenton, England, assignor to Geecen Limited, London, England

Filed May 24, 1973, Ser. No. 363,331
Claims priority, application Great Britain, June 8, 1972, 26875/72
Int. Cl. G07b 13/10
U.S. Cl. 235—30 R 1 Claim

1. In a taximeter having a fare indicator and time pulse means and distance pulse means for providing two sets of electrical pulses representing time and distance respectively, the provision of electronic means whereby time pulses are utilised for operating the fare indicator below a predetermined vehicle speed, while the distance pulses are blocked and distance pulses are utilised for operating the fare indicator above

that speed while the time pulses are blocked and fare indicator operating means (**16, 17, 18**) for utilising the output pulses from said electronic means for operating the fare indicator; said electronic means comprising two counters receiving the time and distance pulses respectively, resetting means (**22, 23**) whereby the output from each counter resets the other counter, two inverters (**25, 26**) inverting the pulses from the counters respectively, a latching circuit connecting the two outputs from the inverters, said latching circuit including a



plurality of first gating means (**28, 29**) whereby each gate passes a pulse when no pulse is given out by the other, by-pass means (**34, 35**) for by-passing the counters and inverters and latching means and feeding time and distance pulses to further gating means to enable them to give out pulses, said further gating means (**32, 33, 36**) receiving pulses from the first gating means and passing pulses to said fare indicator operating means.

3,843,870

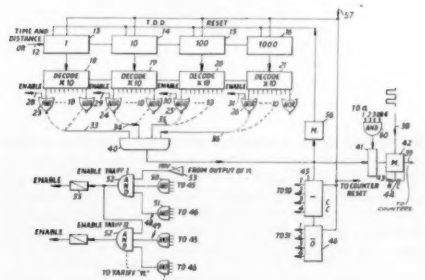
TAXIMETERS

Michael John Craddock, London, England, assignor to Geecen Limited, London, England

Continuation of Ser. No. 299,714, Oct. 24, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,590

Int. Cl. G07b *13/10*

U.S. Cl. 235—30 R **9 Claims**



1. A taximeter having means for providing a first pulse based on time of hire or distance travelled, or a combination of both time and distance, means for generating a series of code pulses from said first pulses, said code pulses corresponding to a series of codes which, in turn, correspond to predetermined distance or time values or a combination of both, pulse feed means operated by said code pulses and which can pass pulses to a fare indicator means, a plurality of control means, each of which can control the passage of the code pulses and means for rendering the control means successively operative at predetermined values of time and/or distance.

3,843,871

APPARATUS FOR DETECTING BREAKAGE OF BLADE OF ROTARY CUTTER

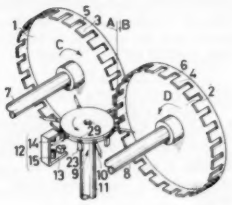
Masaru Fujimaki; Takehiko Okamoto, and Mikio Tashiro, all of Matsushima, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 14, 1973, Ser. No. 332,380

Claims priority, application Japan, Mar. 3, 1972, 47-22050

Int. Cl. G06m *3/02*

U.S. Cl. 235—92 PD **14 Claims**



1. An apparatus for detecting broken blades in a rotary cutter for a tow having at least two radially disposed cutter blades, comprising:

a first detecting member operatively positioned relative to said rotary cutter for producing a pulse each time a cutter blade passes a predetermined location;

a second detecting member operatively positioned relative to said rotary cutter for producing at least one pulse, the exact number thereof being predetermined, for every predetermined number of revolutions of said rotary cutter, said pulses from said second detecting member defining a time period during which the number of pulses produced by said first detector normally reaches the predetermined number;

and a discriminator member connected to said first and second detector members and producing an abnormal indication signal when the number of pulses produced by said first detector in said time period is less than the predetermined number.

3,843,872

TEMPERATURE MEASURING EQUIPMENT WITH POLYNOMEAL SYNTHESIS

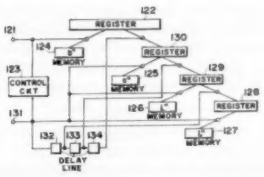
Naonobu Shimomura, 13-8 Sakuragaoka-cho, Shibuya-ku, Tokyo, Japan

Filed Apr. 27, 1972, Ser. No. 248,141

Claims priority, application Japan, Apr. 30, 1971, 46-29112; July 21, 1971, 46-54461; Oct. 4, 1971, 46-77701; Dec. 16, 1971, 46-102036

Int. Cl. G06f *1/02, 15/34;* **G01k** *7/00*

U.S. Cl. 235—92 MT **13 Claims**



1. Apparatus for measuring temperature with a high degree of accuracy, comprising:

a. non-linear temperature sensing means having a given set of characteristics, for providing an output signal indicative of the sensed temperature, and

b. cascade accumulation means including memory means for storing the number indications determined by the given set of characteristics of said temperature sensing means, and responsive to the output signal of said temperature sensing means for repetitive cascade accumulation of said stored number indications to provide an accurate indication of the measured temperature, said cascade accumulation means comprising at least one memory means and at least one register means and a device capable of receiving and storing digital information and said cascade accumulation means operative to effect one cascade accumulation in a manner such that the content of said memory means is added to the content of said register means and the content of said register means is added to the content of said device.

3,843,873

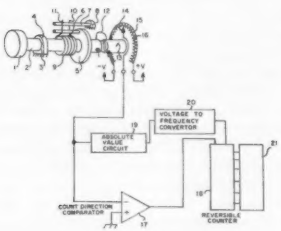
COUNTER HAVING SELECTIVE DIRECTION AND VARIABLE RATE CONTROL

Robert Earl Beville; Bruce Edward Hofer, and William H. Peek, all of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 19, 1972, Ser. No. 290,312

Int. Cl. G06m *3/14*

U.S. Cl. 235—92 EV **15 Claims**



1. Variable rate and selective direction programmable counter means including electrical-mechanical control to program said counter means for precisely operating electronic circuitry during selected time intervals, comprising:

means for selecting positive, negative, or zero voltage levels dependent upon amount of movement of said mechanical control;

means for determining the absolute values of said selected voltage levels;

means for converting said absolute values to frequency values;

means for determining the polarity of said selected voltage levels;

coincident means for receiving the output of said converting means and said polarity determining means to provide coincident signals thereof;

reversible programmable counter means for receiving the output of said coincident means to operate said programmable counter in a forward or reverse direction; and

means for providing a visual display of the information stored in said programmable counter means.

3,843,874

TAXI METER

Heinz Kelch, Martinsweiller 191, 7741 Buchenberg, Germany

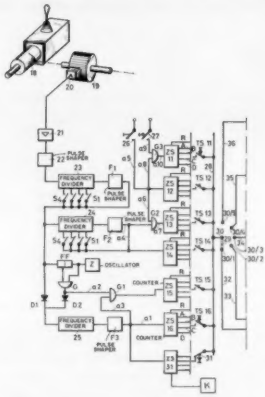
Filed July 11, 1972, Ser. No. 272,912

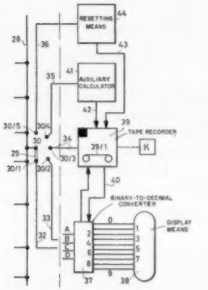
Claims priority, application Germany, July 13, 1971, 2134838

Int. Cl. G07b *13/00*

U.S. Cl. 235—150.2 **12 Claims**

1. In a taxi meter of the type adapted to register the values of a plurality of metered variables, the combination comprising pulse generating means for generating pulses corresponding to increments in the values of such metered variables; a plurality of electronic counter means each operative for counting pulses generated by said pulse generating means and each operative for storing electrical signals indicative of the numerical value of a respective one of such metered variables; digital display means operative for converting electrical signals representative of numbers into a visual display of digits corresponding to such numbers; and selector means for connecting different selected ones of said counter means to said digital display means to convert the electrical signals stored by the selected counter means into a visual display of digits corresponding to the numerical value of the metered variable associated with the selected counter means.





3,843,875

NUMERICAL CONTROL CHECKERING SYSTEM

Laurence K. Goodstal, Ilion; Wayne E. Leek, Mohawk; Robert J. Sanzo, Ilion, all of N.Y.; Robert L. Turner, Newark, Del.; Clark B. Workman, Mohawk, N.Y., and Edward W. Yetter, West Chester, Pa., assignors to Remington Arms Company, Bridgeport, Conn.

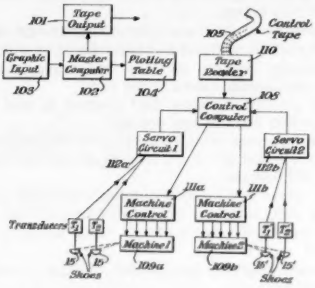
Filed Mar. 7, 1973, Ser. No. 338,690

Int. Cl. G05b *19/02, 19/18;* **B23d** *5/28*

U.S. Cl. 235—151.11 **13 Claims**

1. A method of automatically inscribing a preselected design in a work piece utilizing a power-driven tool concurrently positioned relative to said work piece along a multiplicity of

independent axes comprising cutting the definition lines of said design along two preselected axes lying in a common plane conforming generally to incremental portions of the work surface of said work piece responsive to a preprogrammed control input, and simultaneously positioning said

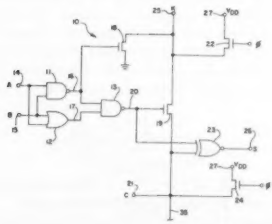


tool along a predetermined depth-establishing axis for said design and along a predetermined tilt axis maintaining predetermined orientation of said tool with respect to said work surface of said work piece responsive to feedback control input.

3,843,876
ELECTRONIC DIGITAL ADDER HAVING A HIGH SPEED CARRY PROPAGATION LINE

Bruce A. Fette, Tempe, and Lester H. Hazlett, Scottsdale, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Sept. 20, 1973, Ser. No. 399,031
Int. Cl. G06f *7/50*
U.S. Cl. 235—175 **8 Claims**



1. A digital adder including N-parallel full adder stages, each stage adaptive to receive its associated addend input signal A, its associated augend input signal B, and a carry-in signal C, for providing a carry-out signal K and a sum signal S, a plurality of the adder stages each comprising:

a. first MOS inverter mode logic means responsive to its associated addend input signal A and its associated augend input signal B for providing a first carry-out control signal at a first output means when its associated A and B input signals are both at a first predetermined level, and a second carry-out control signal at a second output means when its associated A and B input signals are at opposite levels;

b. a carry propagation line means serially interconnecting a plurality of the stages;

c. an MOS carry-in device gate means connected to said second output means and to said carry propagation line means for receiving a carry-in signal C from a lower order stage and being selectively responsive to said second carry-out control signal for generating a carry-out signal K for a higher order stage;

d. an MOS carry-out device gate means connected to said first output means and to said carry propagation line means for selectively providing a carry-out signal K for a higher order stage in response to the first carry-out control signal;

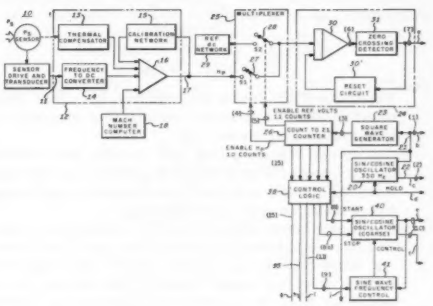
e. a second MOS inverter mode logic means connected to said second output means and to said carry propagation line means from a lower order stage for selectively generating an output signal S in response to its associated A and B input signals and a carry-in signal C from a lower order stage; and

f. means for setting said propagation lines to a predetermined level.

3,843,877
AIR DATA COMPUTER INCLUDING DC TO SYNCHRO SIGNAL CONVERTER

Pierce C. Roselle, Phoenix; David G. Evans, Tempe, and Vaughn R. Bussma, Phoenix, all of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 6, 1973, Ser. No. 330,164
Int. Cl. G06g *7/22*
U.S. Cl. 235—189 **22 Claims**



1. Apparatus for converting a variable direct current signal to a corresponding sine/cosine signal format comprising,

means for providing said variable direct current signal,

oscillator means for providing a reference a.c. time base signal,

means providing a reference d.c. signal,

integrator means,

counter means responsive to said reference a.c. signal for alternately supplying said variable d.c. signal and said reference d.c. signal to said integrator means in opposite senses for predetermined substantially equal time periods and for providing a sampling pulse at a time period corresponding to the ratio of said d.c. signal voltages, and

sample and hold means responsive to said time base a.c. signal and said sampling pulse for supplying d.c. signals proportional respectively to the instantaneous sine and cosine values of said voltage ratio and hence proportional to said variable d.c. signal.

3,843,878
FLASH DEVICE FOR A PHOTOGRAPHIC CAMERA

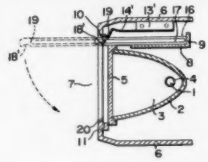
Hiroshi Ueda, Nara, and Masatake Niwa, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed July 18, 1973, Ser. No. 380,239
Claims priority, application Japan, July 31, 1972, 47-90657
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **14 Claims**

1. In a flash device, comprising:

a flash means having an electric flash tube adapted to emit light when flashed;

a reflector for projecting the light emitted by the flash tube means having a curved reflector;
a transparent panel covering the front periphery of said reflector and receiving the flash light projected by said reflector means;
a filter having edges;
a casing having an opening through which the flash light is projected, said opening defining a plurality of edges;
housing means located between said reflector means and said casing along one edge of said opening for housing said filter in a rest position within said casing;
handle means formed near a first edge of said filter and extending outwardly of said opening when said filter is in its rest position;
means for slidingly guiding said filter into said housing means in said casing;
means for retaining said filter in an operational position at



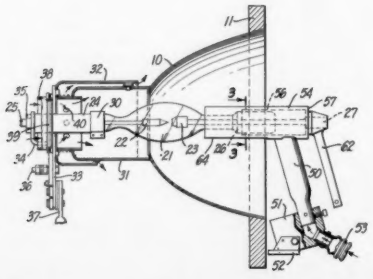
which said filter covers said opening, said filter being rotatable into its operational position after being slid out from said housing means; and
spring means extending into said opening and pressing against a second edge of said filter opposite said first edge when said filter is in its operational position, said spring means facing an edge of the opening;
said retaining means being defined by a locking projection on said casing located forwardly of the edge of said opening facing said spring means, said locking projection being adapted to frictionally engage with said first edge of said filter when in its operational position to thereby retain said filter in its operational position, and being adapted to release said first edge of said filter against the force of said spring means during a shift of said filter to its rest position.

3,843,879

COOLING SYSTEM FOR XENON ARC LAMPS

Richard P. Eddy, Costa Mesa, Calif., assignor to Christie Electric Corp., Los Angeles, Calif.

Filed Feb. 12, 1973, Ser. No. 332,020
Int. Cl. F21v *29/00*
U.S. Cl. 240—47 **3 Claims**



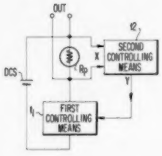
1. In a lamp cooling system, the combination of:
a cabinet;
a generally ellipsoidal mirror having an axis and mounted within said cabinet;
an elongate lamp having a lamp housing with first and second seals, said lamp having first and second in-line terminals entering the lamp housing at the first and second seals, respectively, with the lamp positioned within said mirror along said axis with said first seal and terminal in front of said mirror;
a sleeve positioned about said lamp at said first seal substantially concentric with said axis and defining an annular air flow passage between said seal and sleeve, with said sleeve substantially closed at one end;
a radially positioned supply duct coupled to said sleeve between said first seal and one end;
means for supplying air under pressure to said supply duct for flow into said sleeve and through said annular passage about said first seal;
a second sleeve positioned about said one sleeve and extending along said lamp beyond said first seal and terminating short of the source of light within said lamp housing; and
baffle means engaging said sleeves defining a manifold therebetween;
said supply duct being connected to said second sleeve at said manifold, and said one sleeve having passage means for air flow from said manifold into said one sleeve.

3,843,880

ILLUMINATION-TO-VOLTAGE CONVERSION APPARATUS

Kouichiro Tsuchiyasu, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1973, Ser. No. 411,341
Claims priority, application Japan, Oct. 31, 1972, 47-109281
Int. Cl. G01j *1/42*; H01j *39/12*
U.S. Cl. 250—206 **6 Claims**

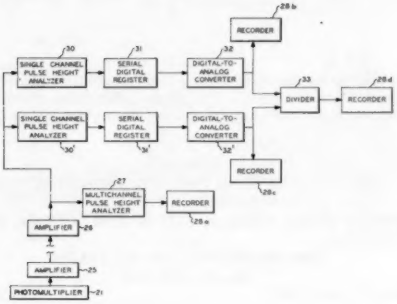


1. Illumination-to-voltage conversion apparatus comprising:
a direct current source,
a photoconductive element having a resistance proportional to the $-\alpha$th power of the received luminous intensity,
first controlling means connected in series with said photoconductive element across said direct current source for controlling the current flowing through said photoconductive element,
second controlling means connected to receive as an input signal the voltage appearing across both ends of said photoconductive element and producing an output signal for controlling said first controlling means to regulate the current through said photoconductive element to be approximately proportional to the $1-\gamma$th power of said voltage appearing across said photoconductive element, and a means for taking out as an output signal the voltage across both ends of the photoconductive element.

3,843,881
DETECTION OF ELEMENTS BY IRRADIATING MATERIAL AND MEASURING SCATTERED RADIATION AT TWO ENERGY LEVELS

Hugh M. Barton, Jr., and Peter R. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 11, 1973, Ser. No. 322,696
Int. Cl. G01t *1/20*
U.S. Cl. 250—269 **9 Claims**



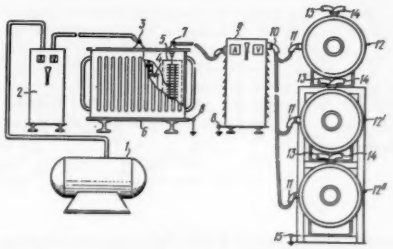
1. The method of detecting the presence of metals in subterranean formations comprising moving through a formation to be analyzed a source of electromagnetic radiation of an energy level greater than the energy level of X-rays emitted by the metals to be detected, moving a radiation detector through the formation adjacent the source but shielded therefrom so as to measure radiation emitted from the formation as a result of the formation being irradiated from the source, establishing a first signal representative of the radiation received by the detector at a first energy level in the region of Compton scattered radiation from the formation, establishing a second signal representative of the radiation received by the detector at a second energy level in the region of Compton scattered radiation from the formation, said two energy levels being approximately the two peak energy levels of scattered radiation from the formation, respectively, whereby a comparison of the two signals provides information regarding the presence of metal ore in the formation.

3,843,882
APPARATUS FOR ELECTRICAL DISCHARGE TREATMENT OF A GAS FLOW

Gennady Nikolaevich Presnetsov, Ploschad Ostrovskogo, 9, kv. 25, and Andrei Vladimirovich Dmitriev, Ulitsa 23, kv. 48, both of, Leningrad, U.S.S.R.

Filed June 21, 1973, Ser. No. 372,413
Int. Cl. C01b *13/12*; **B01k** *1/00*
U.S. Cl. 250—536 **8 Claims**

1. An apparatus for electrical discharge treatment of a gas flow comprising: at least one gas-discharge slot reactor which has an inlet and an outlet for a gas flow; at least one pair of electrodes for each gas-discharge slot reactor limiting the gas space thereof; a first electrode of said gas-discharge slot reactor connected to earth; a dielectric disposed between each pair of said electrodes; a second electrode of said gas-discharge reactor separated by said dielectric from said first electrode; a switching circuit for each said reactor, connected with said electrodes of said reactor; a rectifier with an input lead and an output lead converting alternating current to direct current and connected to said switching circuit; a control means connected to said switching circuit and alternately switching during operation of said apparatus said second electrode of said reactor to the leads of said rectifier so as to recharge the capacitances of said dielectric and said gas space of said reactor and excite an electrical discharge within said gas space; a transformer the secondary winding of which is connected to the input of said rectifier; and A.C. source the

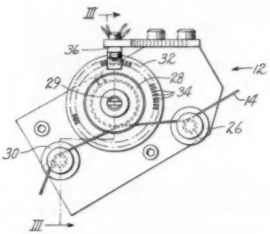


output of which is connected to the primary winding of said transformer.

3,843,883
THREAD USE MONITOR

Raymond A. De Vita, Hamilton; Adolph S. Dorosz, Beverly, and Nicholas P. Szydlek, Lynn, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Mar. 8, 1973, Ser. No. 339,161
Int. Cl. G01d *5/36*
U.S. Cl. 250—233 **4 Claims**



1. Apparatus for sensing improper operation of a machine which utilizes thread-like elements in a substantially repetitive cycle comprising:

A. Sensing means which generate a signal relative to the length of the element actually used during each operative cycle of the machine;

B. Means for generating a predetermined signal relative to the average length of thread used during a normal cycle of the machine; and

C. Analyzing means which receive the actual signal and the normal signal and generate an alarm signal relative to the difference between said normal and actual signals.

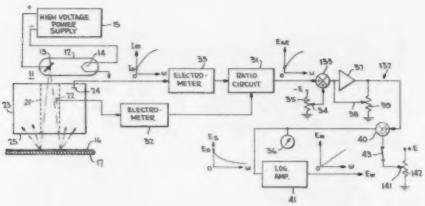
3,843,884
X-RAY GAUGING METHOD AND APPARATUS WITH STABILIZED RESPONSE

Howard J. Evans, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Sept. 20, 1971, Ser. No. 181,837
Int. Cl. G01n *23/22*
U.S. Cl. 250—272 **41 Claims**

1. In a system for monitoring a property of a material irradiated by an X-ray beam subject to variations in intensity, said material fluorescing to emit energy in response to the X-ray beam impinging thereon, an X-ray detector chamber positioned to transmit the X-ray beam on to the material, said

X-ray detector including means for deriving a first signal indicative of the intensity of the X-ray beam impinging on the transmitted material, an energy detector positioned on the



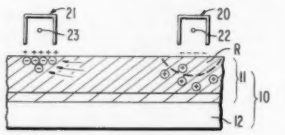
same side of the material as the X-ray detector to intercept the energy, said energy detector including means responsive to the intercepted energy for deriving a second signal indicative of the intensity of said intercepted energy.

3,843,885

METHOD FOR CHARGING ELECTROPHOTOGRAPHIC MATERIAL

Masamichi Sato; Masaaki Takimoto, and Takao Komaki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 26, 1972, Ser. No. 275,400
Claims priority, application Japan, July 26, 1971, 46-55835
Int. Cl. G03g *13/02*
U.S. Cl. 250—326 **2 Claims**



1. A method for charging to a first polarity electrophotographic material consisting of an insulating base and a photoconductive insulating layer directly coated thereon and including a semiconductor having majority carriers of said first polarity, said method comprising:

a. uniformly exposing the surface of said photoconductive layer to light of a wavelength absorbable by said photoconductive insulating layer such that said surface becomes conductive; and, simultaneously while said surface is still conductive:

b. exposing a first area of said surface of said photoconductive insulating layer to first corona discharge ions of a first polarity; and

c. exposing a second area of said surface of said photoconductive insulating layer to second corona discharge ions of the opposite polarity to said first corona discharge ions, whereby said surface of said photoconductive insulating layer becomes charged to said first polarity.

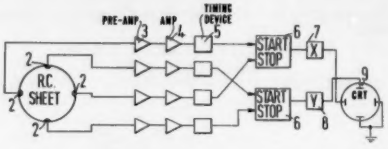
3,843,886

POSITION SENSITIVE RADIATION DETECTOR

Jan Willam Marinus Hermanus Stumpel, Woking; Peter William Sanford, Bramley, and Christopher Graham Rapley, Guilford, all of England, assignors to National Research Development Corporation, London, England

Filed May 17, 1973, Ser. No. 361,330
Claims priority, application Great Britain, May 18, 1972, 23463/72
Int. Cl. G01t *1/24*
U.S. Cl. 250—336 **5 Claims**

1. A device for detecting ionising radiation comprising a homogeneous plate-like conductor, a plurality of electrodes connected only to the periphery of the conductor for detecting electrical energy induced by charges deposited on the surface of the conductor, amplifiers coupled to the electrodes



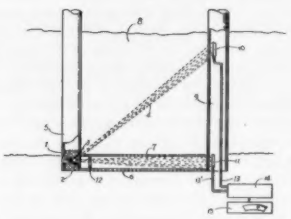
to amplify the signals so obtained and means for analysing the signals from the amplifiers to derive information concerning the position of the charge deposited on the conductor.

3,843,887

SELF CALIBRATING ISOTOPIC PRECIPITATION MEASUREMENT GAGE

Roderick Gordon Morrison, 3440 N. 33rd St., Boise, Idaho 83703

Filed May 22, 1972, Ser. No. 229,266
Int. Cl. G01t *1/16*
U.S. Cl. 250—358 **9 Claims**



1. In a system for measuring accumulation of atmospheric precipitation in a measurement zone by transmission of radiation from a radioactive source of energy through the measurement zone and detection of said transmitted radiation by measurement and reference detectors producing output pulses at rates dependent on the energy level of the detected radiation; the improvement comprising a body of radiation transmitting medium of constant density, means for mounting said detectors in fixed spaced relation to the source, shield means for directing radiation from said source along separate collimated beams extending respectively through the accumulated precipitation and constant density medium to said detectors, attenuation means mounted in said body of constant density medium for establishing a reference ratio of pulse rates between the output pulses of the detectors, and means for registering the output pulses of the measurement detector during a period determined by a fixed number of output pulses from the reference detector; whereby the number of output pulses registered during said period is a function of the density of the accumulated precipitation in the measurement zone.

3,843,888

METHOD AND APPARATUS FOR INSPECTING TIRES

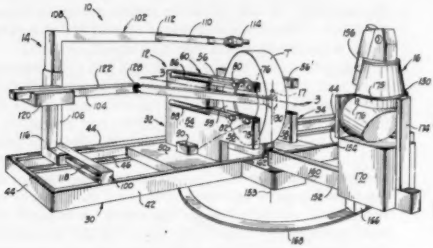
Richard L. T. Fox, Cleveland Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed May 19, 1972, Ser. No. 254,939
Int. Cl. G01n *23/00*
U.S. Cl. 250—360 **25 Claims**

1. A tire inspection system comprising:

a. first and second tire engaging assemblies disposed at

opposite sides of a tire and engageable with tire bead rims, respectively;
b. means for rotating a tire engaged by said assemblies about its centerline;
c. radiation source means defining a location from which penetrative radiation is emitted for penetrating a tire wall;
d. source support means for supporting said radiation source means between said first and second tire engaging assemblies and constraining said source against movement transverse to the direction of extent of the tire centerline;



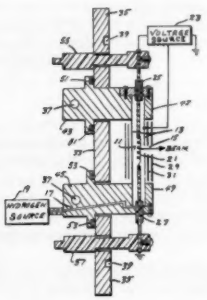
e. first actuator means for enabling relative movement of said tire engaging assemblies away from each other to enable spreading of the tire bead rims axially apart;
f. second actuator means for shifting a supported tire in a direction transverse to the tire centerline to an inspection position wherein said location is disposed within or adjacent a circumferential section of a torus defined by said tire; and,
g. radiation detection means for producing inspection information concerning the tire disposed exteriorly of said circumferential section of the tire torus.

3,843,889

HIGH INTENSITY PROTON SOURCE

James K. Layton, and Gustav D. Magnuson, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 29, 1973, Ser. No. 420,356
Int. Cl. H01j *37/08*
U.S. Cl. 250—423 **5 Claims**



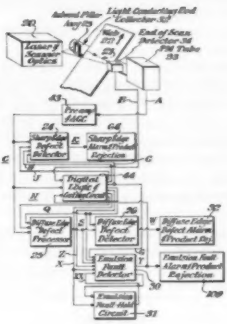
1. A proton source comprising:
a. a support disk;
b. a pair of stainless steel supporting posts mounted on the supporting disk equidistant from the center;
c. a filament supported by the supporting posts;
d. a voltage source connected to the filament;
e. an anode having a beam output orifice mounted between the supporting post and connected to the voltage source, the anode being cylindrically shaped and forming an ionizing chamber containing the filament;
f. a pair of heat shields surrounding the anode and having orifices concentric with the orifice of the anode;
g. a source of ionizing gas; and
h. a gas line embedded in one supporting post having one terminal fed by the ionizing gas source and the other terminal feeding into the ionizing chamber.

3,843,890

OPTICAL-ELECTRICAL WEB INSPECTION SYSTEM

John D. Anthony, Jr.; Mark E. Faulhaber, and Edmund H. Smith, Jr., all of Wilmington, Del., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 27, 1973, Ser. No. 383,289
Int. Cl. G01n *21/32*
U.S. Cl. 250—563 **5 Claims**

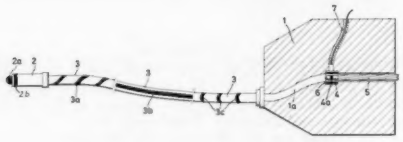


1. A flying spot inspection system for web materials comprising:
a radiation source,
means traversing a beam of radiation from said source in a scan across said web,
electronic means responsive to said beam of radiation in either the reflection mode or the transmission mode with respect to said web detecting the existence of three general classes of defects and discriminating said defects as to class, consisting of:
1. sharp edge defects,
2. diffuse edge defects and
3. protracted duration defects characterized by an amplitude-shifted pedestal of the optical-to-electrical transduction signal produced in said scan of said web,
means responsive to said electronic means detecting said defects identifying web materials containing said defects and passing the remainder of said web materials as acceptable product, and
automatic calibration means providing at the outset of each said scan said electronic means with an instantaneous basic reference voltage signal retained during the balance of each said scan determined by operation of said system with a preselected radiation attenuation filter replacing said web at the outset of said scan.

3,843,891
DEVICE FOR EXAMINING MATERIALS OR FOR SURGICAL TREATMENTS BY GAMMA RAY IRRADIATION

Kurt Sauerwein, Kattendahl 7, Hochdahl-Millrath, and Hans Goedecke, Mettmann, both of Germany, assignors to said Sauerwein, by said Goedecke

Filed June 28, 1972, Ser. No. 267,223
Claims priority, application Germany, June 29, 1971, 2132167
Int. Cl. G01j *39/18*
U.S. Cl. 250—483 11 Claims

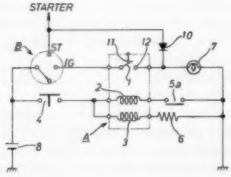


1. A device for examining material and for treating humans and animals with local gamma ray irradiation, comprising in combination,
- a shielding block of gamma ray absorbing material having a bore with at least one open end;
- a hose being mounted on said shielding block in substantially coaxial alignment with said bore;
- a probe head mounted at the free end of said hose;
- a flexible cable slidably disposed in said bore;
- a capsule mounted on the free end of said flexible cable;
- gamma ray emitting material in said capsule; and
- means operatively mounted on said device which become luminous upon irradiation with gamma rays including a carrier made of lacquer, said means which become luminous being formed by a ring of lacquer on said probe head;
- said flexible cable carrying said capsule being adapted to be propelled or retracted through said hose and said means becoming luminous when said capsule approaches.

3,843,892
OPERATION INDICATING DEVICE FOR HYDRAULIC BRAKE SYSTEM

Ikuya Kobayashi; Motoi Noba, both of Toyota, and Hiroaki Fujimoto, Osaka, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 19, 1973, Ser. No. 426,121
Claims priority, application Japan, Dec. 27, 1972, 47-3318
Int. Cl. B60t *17/22*
U.S. Cl. 307—10 R 5 Claims

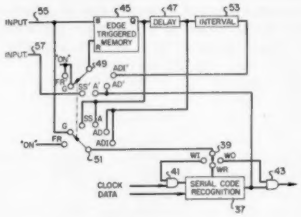


1. A device for indicating troubles within an automobile hydraulic brake system having a master cylinder, wheel brake cylinders and hydraulic braking circuits to connect said master cylinder with said wheel brake cylinders, comprising:
- an electric source;
- a key switch;
- a pilot lamp located at a convenient place;
- contact means including a first and a second fixed contacts permanently magnetized, said first contact being insulated and said second contact being connected with said lamp, and a magnetizable mobile contact to be engaged with said second contact for selectively connecting said electric source to said lamp through said key switch;
- pressure switch means disposed within said braking circuits to be actuated in response to a pressure value at or over a predetermined one within said braking circuits;
- brake switch means normally opened and operable with a brake pedal on which stepping causes closure of said brake switch means, said closure being conducted after the actuation of said pressure switch means in normal operation thereof when pressure of said predetermined value is produced within said braking circuits; and
- electromagnetic relay means including a first coil connected at its one end to said electric source across said brake switch means and grounded at its other end across said pressure switch means, and a second coil connected in parallel with said first coil and said pressure switch means, said first coil being wound in an opposite direction against said second coil around said mobile contact and producing larger electromagnetic force than that of said second coil, whereby said mobile contact is engaged with said second fixed contact by means of the electromagnetic force exerted from both or one of said coils energized upon the closure of said brake switch means with said pressure switch means remaining extraordinarily inoperative to light said pilot lamp and maintains the engagement with said second contact by the permanent magnetic force of said second contact itself so as to let said pilot lamp remain lighted.

3,843,893
LOGICAL SYNCHRONIZATION OF TEST INSTRUMENTS

Frank Duncan Terry, Woodland Park, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 20, 1973, Ser. No. 381,207
Int. Cl. G01r *31/00*
U.S. Cl. 307—87 15 Claims

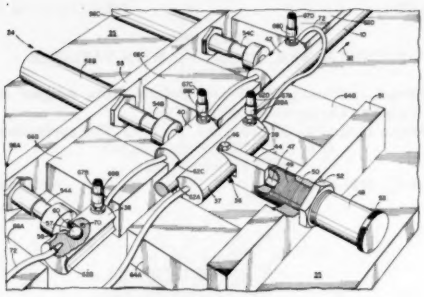


1. A method for synchronizing an electronic test instrument to a multi-channel digital electronic system under test, said method comprising the steps of:
- providing digital input signals from one or more channels of the digital electronic system under test, the input signal on each channel comprising a sequence of "on" and "off" bits;
- storing a preselected bit pattern of "on" and "off" bits;
- generating a time interval indication to serve as a window in time;
- sensing the bits in a first one of the input signals to detect the occurrences, if any, of sequences of bits corresponding to the preselected bit pattern; and
- generating a trigger signal input to the electronic test instrument whenever a sequence of the detected bits corresponds to the preselected bit pattern during said window in time.

3,843,894
ELECTRICAL CONTACT APPARATUS

Robert E. Hunt, Andover; John Delahanty, Boston, and Bruce M. Lane, Bedford, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 29, 1973, Ser. No. 346,141
Int. Cl. H01r 41/00
U.S. Cl. 307—145 14 Claims



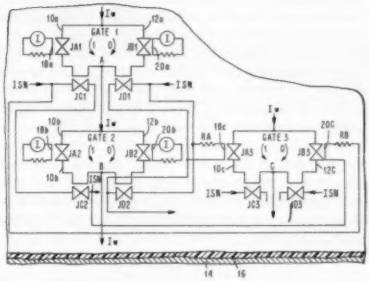
1. Electrical contact apparatus for application of high current to an elongated moving element and comprising:
mounting means;
at least one first contact member supported by said mounting means and having a contact surface in confronting sliding contact with said moving element on a first side of said element;
at least one second contact member supported by said mounting means and having a contact surface in confronting sliding contact with said moving element on a second side of said element substantially opposite to said first side;
said at least one first and second contact members being operative to guide said elongate moving element along a predetermined travel path;
the electrical contact surface of each of said contact members comprising a shaped surface having a configuration complementary to the confronting surface configuration of said moving element;
biasing means operative to maintain said contact members in intimate engagement with said moving element;
electrical current supply means for conducting high current to said contact members; and
contact member supporting means operative to allow movement of said contact members with respect to said mounting means to accommodate spurious motion and irregularities of said moving element.

3,843,895
TWO-WAY OR CIRCUIT USING JOSEPHSON TUNNELLING TECHNOLOGY

Harvey C. Hamel; Charles A. Kunzinger, and William K. Stelzenmuller, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 374,821
Int. Cl. H03k 19/168, 19/30
U.S. Cl. 307—212 9 Claims

1. A logical OR circuit using Josephson tunnelling devices comprising:
a first, second and third gate;
a first and second branch circuit in parallel included in each of said gates;
a first Josephson tunnelling device located in the first branch circuit and a second Josephson tunnelling device located in the second branch of each of said first, second and third gates;
a source of DC current applied to each of said first, second and third gates;
control means for selectively applying inputs to said first and second Josephson devices in each of said gates to cause the selected devices to switch to their finite voltage state causing said input current to flow in the other one of the said first and second branch circuits;
first sensing means located adjacent the first branch of said first, second and third gates for sensing the current flow in said first branches;
connecting means connecting the first sensing means of the first branches of the first and second gates to the control means of the second branch of the third gate to switch the

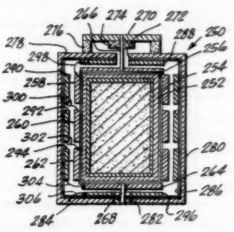


second Josephson device of said third gate to its finite voltage state if said sensing means senses current flow in one or more branches of said first branch of said first and second gates;
second sensing means located adjacent the second branches of said first, second and third gates for sensing the current flow in said second branches; and
connecting means connecting the second sensing means of the second branches of the first and second gates to the control means of the first branch of the third gate to switch the first Josephson tunnelling device of said third gate to its finite voltage state if said sensing means senses current in both of said second branches of said first and second gates.

3,843,896
RADIOISOTOPIC THERMOINIC CONVERTER

Ned S. Rason, Dayton, Ohio; John G. De Steese, Kennewick, and Kenneth A. Gasper, Richland, both of Wash., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation of Ser. No. 794,933, Jan. 29, 1969, abandoned.
This application Feb. 4, 1972, Ser. No. 223,691
Int. Cl. H01j 45/00
U.S. Cl. 310—4 14 Claims



1. A radioisotopic thermionic converter comprising:
an emitter capsule including a radioisotope fuel mass source

of thermal power, at least one layer of material encapsulating and shielding said fuel mass, and an external emitter surface on said layer of material energized by said fuel mass;

an outer housing including an internal collector surface, said housing enclosing said emitter capsule and providing further shielding for said encapsulated fuel mass, said housing providing a vacuum envelope and maintaining a low pressure condition therein to effect a nominally vacuum mode of operation of said converter;

means for mounting said emitter capsule in said housing and maintaining said emitter surface normally at a substantially predetermined spacing from said collector surface, said mounting means including elastic means connecting respective ends of said emitter capsule to corresponding ends of said housing whereby said emitter capsule is supported substantially at its ends; and

output means adapted to connect respectively with said emitter and collector surfaces, for providing an electrical output from said converter, at least one of said elastic means simultaneously serving as the one of said output means connecting with said emitter surface,

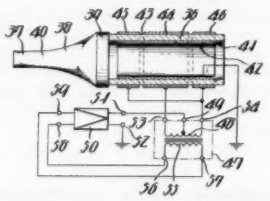
whereby direct containment of fuel within said emitter capsule effects the most efficient thermal coupling of heat source and diode conversion portion of said converter and the maximum temperature of any portion of said fuel mass does not differ significantly from the temperature of said emitter surface.

3,843,897

SUPERSONIC TRANSDUCER

Shoji Mishiro, Tokyo, Japan, assignor to Taga Electric Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1973, Ser. No. 345,530
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.1 **7 Claims**



1. A supersonic transucer that vibrates in response to an applied electric signal comprising:

an electrostrictive element having a pair of vibrating surfaces,

a common electrode surface positioned adjacent one surface of said electrostrictive element,

a positive electrode surface comprising a first and a second portion positioned adjacent the surface of said electrostrictive element opposite to said one surface,

means for applying the common component of the signal to said common electrode surface and the positive component of the signal to the first and second portions of said positive electrode surface,

the first portion of said positive electrode surface being positioned adjacent the section of said element which has a vibrating stress which is larger than an adjacent vibrating stress in said element,

the second portion of said positive electrode surface being positioned adjacent the section of said element which has a vibrating stress which is smaller than an adjacent vibrating stress in said element,

the surface area of said first portion being equal to the surface area of said second portion so that the brake admittance of said first portion is equal to the brake admittance of said second portion,

means for detecting the difference between the dynamic admittance of the first portion and the dynamic admittance of the second portion,

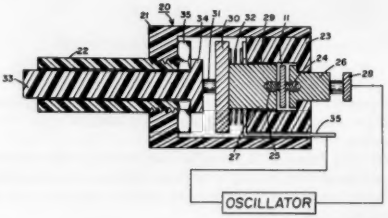
means for adjusting the frequency of the applied electric signal in response to the dynamic admittance of the first portion and the dynamic admittance of the second portion.

3,843,898

PIEZOELECTRIC MOUNTING WITH VARIABLE DAMPING

Edmund T. Maciag, Middleburg Heights, Ohio, assignor to Vernitron Corporation, Bedford, Ohio

Division of Ser. No. 301,480, Oct. 27, 1972. This application Dec. 19, 1973, Ser. No. 425,943
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.2 **4 Claims**



1. A mount for a piezoelectric element having substantially flat parallel faces, comprising: rigidly positioned damping means located adjacent to one face of said element, spring means interconnecting said one face to said rigidly positioned damping means, movable damping means located adjacent to the other face of said element, spring means interconnecting said other face to said movable damping means, biasing means for biasing said movable damping means to assume a static position relative to said rigidly positioned damping means, and actuating means for overcoming said biasing means to change the relative positions of said damping means.

3,843,899

TUNGSTEN-BROMINE CYCLE INCANDESCENT LAMP CONTAINING BORON

Germain Remi T'Jampens, and Gerrit Prakken, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,802
Int. Cl. H01k *1/50*
U.S. Cl. 313—222 **4 Claims**

1. An electric incandescent lamp having a filament body of tungsten an envelope having a wall contoured with respect to said filament body to maintain said wall at a temperature at which tungsten-bromine compounds are volatile a gas for said envelope comprising bromine and hydrogen which are introduced into the lamp in proportions between hydrogen and bromine of 1 or more, and a quantity of gram atoms of boron in the gas atmosphere in the envelope, said quantity being less than 10 percent of the gram atoms of bromine in the lamp and at least equal to the quantity which corresponds to the vapour pressure above solid boron at a temperature of 200° C.

3,843,900

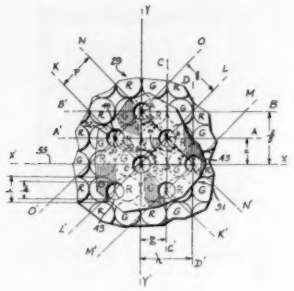
SHADOW MASK APERTURE AND PHOSPHOR DOT ARRANGEMENT IN TWO COLOR CATHODE RAY TUBE

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 273,158, July 19, 1972, Pat. No. 3,777,202, which is a division of Ser. No. 153,695, June 16, 1971, Pat. No. 3,720,854. This application May 22, 1973, Ser. No. 362,745

Int. Cl. H01j *31/20, 29/32*

U.S. Cl. 313—408 1 Claim



1. A shadow mask and screened viewing panel combination for use in a color cathode ray tube utilizing two electron beams to produce a luminescent screen display, said combination comprising:

a metallic foraminous shadow mask member wherein the multitude of apertures defined by the interstitial webbing are arrayed in a substantially uniform pattern, said apertures being adjacently related in a manner to effect a plurality of rows defining a plurality of linear directional relationships, said rows of a given directional orientation being parallel, any three of said mutually adjacent apertures in any two adjacent parallel rows being oriented in an isosceles right triangular relationship, the hypotenusal sides of said triangles defining X and Y axial directions in said mask member, the right angular related sides of said triangles defining 45 degree diagonal relationships of said apertures with said axes, the spacings between adjacent parallel rows of apertures associated with both the X and Y axes being equal to substantially one-half the linear spacing between the apertures in said rows directionally associated with both of said axes; and

a cathodoluminescent screen formed on said viewing panel adjacent to said apertured shadow mask, said screen being dot-patterned with a repetitive array of two phosphor areas substantially equally adjacent to one another being disposed in accordance with the aperture array of said mask, said two phosphor areas being alternately and adjacently disposed in a similar manner in linear parallel rows in both horizontal and vertical directional relationships in said screen; said mask being spacedly affixed to said screened panel to provide a combination assembly.

3,843,901

MULTI-BEAM CATHODE RAY TUBE CONSTRUCTION

Adrian W. Standaart, 5 Bonbrook Cir., Winston-Salem, N.C. 27106

Division of Ser. No. 172,756, Aug. 18, 1971, Pat. No. 3,748,514. This application Mar. 20, 1973, Ser. No. 343,030The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.

Int. Cl. H01j *29/50*

U.S. Cl. 313—409 8 Claims

1. A multi-beam cathode ray tube construction for producing a matrix display pattern from plural electron beams arranged in plural rows and plural columns to generate display images of alpha-numeric characters formed from spot elements of the matrix pattern, comprising a glass envelope including an elongated generally cylindrical neck section and a face plate section jointed thereto having a phosphor target; a single electron gun within the rear region of said neck section including a cathode for emitting electrons, beam control and shaping perforated electrode means having plural rows of plural holes for controlling and shaping the electrons emitted by said cathode into plural rows of plural beams to form the matrix pattern; and accelerating anode means for accelerating the electrons in said beams toward the target to form a spot

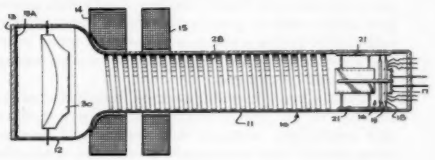


image on the target for each of the beams, said anode means including a gradient field helical anode and means applying to said helical anode a negative potential with respect to zero voltage throughout its extent biasing said helical anode throughout at a negative voltage and providing a potential gradient progressing axially of the neck section from a maximum negative voltage nearer the cathode to a selectively lower negative voltage near the target for exerting a counter force resisting forces of mutual repulsion of the beams from each other arising from the like polarity charges of the beams to eliminate beam divergence from repulsion of the like charges of the beams.

3,843,902

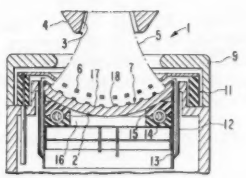
GRIDDED CONVERGENT FLOW ELECTRON GUN

George V. Miram, Daly City, and Gerhard B. Kuehne, Santa Clara, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 283,432, Aug. 24, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,674

Int. Cl. H01j *1/48, 1/94, 19/48*

U.S. Cl. 313—454 3 Claims



1. In an electron gun:

thermionic cathode emitter means having, a base member with a concave emitting surface, said concave emitting surface being constituted of a plurality of lesser individual concave oxide coated cathode emitter surfaces, said lesser oxide coated emitter surfaces being concave in each of two orthogonal directions with radii of curvature substantially less than that of said composite cathode emitter surface;

an accelerating electrode means having a central aperture of substantially smaller cross-sectional area than the area of said emitting surface of said cathode emitter, said central aperture being disposed in axial alignment with the center of said concave emitting surface of said cathode emitter for accelerating and converging a stream of electrons through said central aperture of said accelerating electrode into a unitary beam of electrons;

control grid means comprising a multiapertured concave control grid structure disposed overlaying the concave emitting surface of said cathode emitter with the centers of individual apertures in said control grid structure being disposed in alignment along the convergent beam path with the centers of individual lesser concave cathode emitting surfaces to form a plurality of individual convergent beam electron guns projecting the beam through said control grid in a plurality of nonintercepting beamlets which converge into the unitary beam after passage through said control grid;

shadow grid means comprising a second multiapertured grid structure of substantially identical hole pattern to that of said control grid structure, said shadow grid structure being carried from said cathode emitter and operated at the same potential as said cathode emitter for inhibiting thermionic emission from the underlying regions of said cathode emitter shadowed by said shadow grid and for focusing the lesser beamlets through the respective aligned apertures in said control grid structure, and said shadow grid being made of a materail having essentially the same coefficient of thermal expansion as that of said cathode emitter, said shadow grid being joined to the adjacent surface of said cathode emitter at a plurality of discrete points spaced over the surface of the cathode emitter, the remaining portions of said shadow grid being adjacent, but free of attachment to, said cathode emitter.

3,843,903

HIGH VOLTAGE GENERATOR

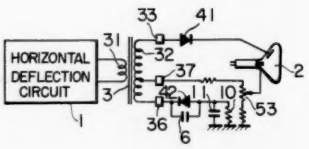
Keisuke Miyoshi, Katano, and Naoki Shibano, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed June 4, 1973, Ser. No. 366,513

Claims priority, application Japan, June 22, 1972, 47-62678; June 22, 1972, 47-62679; June 22, 1972, 47-62680

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **9 Claims**



1. A high voltage generator comprising a transformer having a secondary winding, a first rectifier having one end thereof connected to one end of said secondary winding and the other end thereof connected to a reference potential point, said first rectifier being provided to float the secondary winding of said transformer from the reference potential point, and a second rectifier having the same polarity as that of said first rectifier with respect to DC current flowing through the secondary winding of said transformer, said second rectifier having one end thereof connected to the other end of said secondary winding and the other end thereof being an output terminal for a load.

3,843,904

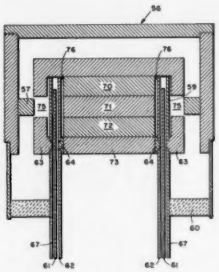
MAGNETIC FIELD GEOMETRY FOR CROSSED-FIELD DEVICES

William C. Brown, Weston, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 1, 1973, Ser. No. 384,850

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.71 **7 Claims**



1. In a crossed-field device having a generally cylindrical cathode and an anode circumferentially disposed thereabout defining an electronic interaction area therebetween, the improvements comprising:

means for generating the magnetomotive force necessary to provide the magnetic field of said device;

means associated with said generating means for forming a partial magnetic circuit disposed exterior of and adjacent to one end of said cathode;

means forming an evacuable envelope enclosing said interaction area and

means completing said partial magnetic circuit disposed adjacent to the other end of said cathode in the region of said interaction area,

said generating means comprising a main magnet encompassed by the cathode of said device and disposed outside the vacuum envelope thereof,

whereby a compact crossed-field device is provided in which the magnetomotive force is at the potential of the cathode and is removable without affecting the vacuum envelope thereof.

3,843,905

BORDER SUSTAINER SYSTEM FOR GAS DISCHARGE PANEL

Donald D. Leuck, and Leonard M. Budzynski, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 9, 1972, Ser. No. 233,277

Int. Cl. H05b *37/00*

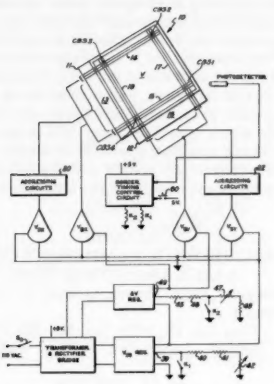
U.S. Cl. 315—169 TV **5 Claims**

1. In gaseous discharge display system, including a panel having a row-column conductor matrix defining a panel display area, and generator means supplying sustaining voltage to said conductor matrix, and means supplying discharge manipulating pulse voltages to said conductor matrix, a set of row border conductors, a set of column border conductors and means for controlling border discharge sites in said panels located by said border conductors, including separate generator means for generating sustaining voltages for each said row and said column conductors sets, the improvement in said means for controlling border discharge sites which comprises:

a direct current power supply common to each said separate means for generating sustaining voltages

and said means for supplying sustaining voltage to said conductor-matrix, said direct current power supply including

1. means for establishing a first direct current voltage level applied to said means for supplying sustaining voltages to said conductor matrix;



2. means for establishing a second and a third direct current voltage levels, each of said second and third direct current voltage levels being above the voltage level of said first direct current voltage level; and

border timing control means for controlling the time of occurrance of each said direct current voltage level.

3,843,906

METHOD OF REDUCING THE GENERATION OF OZONE

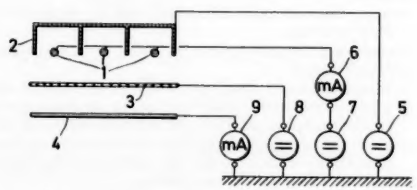
Klaus Leibrecht, Hofheim, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Mar. 19, 1973, Ser. No. 342,625

Claims priority, application Germany, Mar. 20, 1972, 2213419

Int. Cl. H01t *19/00*

U.S. Cl. 317—4 **2 Claims**



1. Corona discharge apparatus comprising,

a. at least one corona wire,

b. an electrically conductive screen which surrounds the corona wire or wires on three sides,

c. a grid arranged between a photoconductor layer and the fourth, open, side of the screen, with the corona wires, the screen, and the grid being electrically insulated from each other,

d. a first voltage source for the corona wire or wires,

e. a second voltage source for the grid, and

f. a third voltage source for the screen, the voltage of the latter lying between the voltage of the first voltage source and that of a photoconductor support.

3,843,907

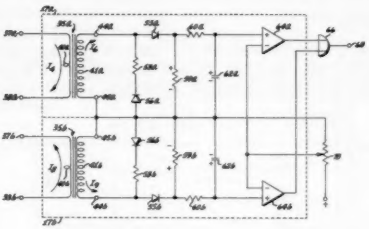
ADJUSTABLE OVER-CURRENT DETECTOR

Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 7, 1973, Ser. No. 413,731

Int. Cl. H02h *3/36*

U.S. Cl. 317—27 R **4 Claims**



1. An over-current detector for use with a switching regulator, said detector comprising:

first and second input terminals;

a current transformer having a primary winding and a secondary winding, said first input terminal being connected to a first end of said primary winding, said second input terminal being connected to a second end of said primary winding;

first and second diodes each having an anode and a cathode, said anode of said first diode being connected to a first end of said secondary winding, said anode of said second diode being connected to a second end of said secondary winding;

first, second and third resistors, said first resistor being connected between said cathode of said second diode and said first end of said secondary winding, said second resistor being connected between said cathode of said first diode and said second end of said secondary winding; a voltage comparator having first and second input leads and an output lead, said third resistor being connected between said cathode of said first diode and said first input lead of said comparator;

a capacitor, said capacitor being connected between said first input lead of said comparator and said second end of said secondary winding; and

a reference potential, said potential being coupled to said second input lead of said comparator.

3,843,908

VOLTAGE FAILURE SENSING CIRCUIT

Robert A. Priegnitz, Crystal Lake, Ill., assignor to Coilcraft Inc., Cary, Ill.

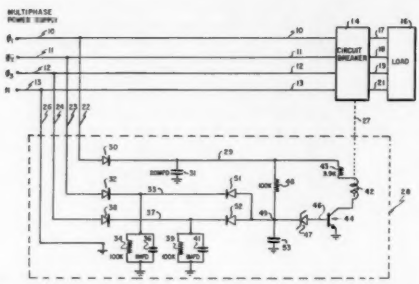
Filed Dec. 3, 1973, Ser. No. 421,232

Int. Cl. H02h *3/24*

U.S. Cl. 317—31 **19 Claims**

1. A circuit for sensing voltage failure in a multiphase conductor power supply comprising: first circuit means connected to at least one of the phase conductors for deriving a first DC. voltage corresponding to the maximum phase conductor voltage; second circuit means connected to certain of the phase conductors for deriving second DC. voltages respectively corresponding to the phase conductor voltages thereof; sensing means in circuit with said first voltage; electronic switching means having a control element, said switching means being in series circuit with said sensing means and ground, said sensing means being energized upon application of said first voltage thereto when said switching means is conductive; first

gating means in circuit with said control element, said first gating means being conductive upon application of a predetermined voltage thereto; biasing means in circuit with said first voltage and said first gating means for conductively biasing said switching means through said first gating means upon conduction of the latter when said first voltage exceeds said predetermined voltage; and second gating means connecting each said second circuit means to said first gating means, each



said second gating means being conductive when the said second voltage derived thereto decreases to a value below said predetermined voltage, conduction of a said second gating means serving to decrease the voltage on said first gating means to said value for rendering the latter non-conductive, thereby interrupting the bias to said switching means; whereby voltage failure of any of the phase conductors to a value less than said predetermined voltage serves to interrupt bias to said switching means to de-energize said sensing means.

3,843,909
MOBILE INTEGRATED CABLE SYSTEM FOR COMMUNICATION AND ENERGY-DISTRIBUTION PURPOSES

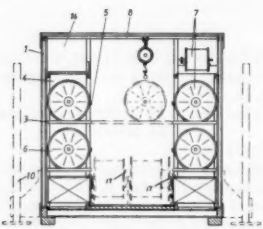
Peter Asselborn, Bergisch-Gladbach; Gerhard Haase, Cologne, and Guenther Menne, Leverkusen, all of Germany, assignors to Felton & Guilleaume Kablewerke Aktiengesellschaft, Koln, Germany

Filed Feb. 8, 1973, Ser. No. 330,513

Claims priority, application Germany, Feb. 18, 1972, 2207646

Int. Cl. H02b *1/04*

U.S. Cl. 317—99 **6 Claims**



1. A transportable integrated apparatus for the construction of a cable system, comprising, in combination, a transportable container comprising in the interior thereof a skeletal supporting framework and a plurality of cable drums of different sizes supported on said supporting framework; a complete operative communications system in said transportable container in disassembled form, said communications system including a telephone switching exchange, and also a complete low-voltage energy-distribution system in said transportable container in disassembled form, including a supply of different types of cable provided on said cable drums; means provided in said transportable container for assembling said communications system and for assembling said energy-distribution system, and including an elongated guide rail mounted in said container and a hoist arrangement mounted on said guide rail for sliding movement in said container along the length of said guide rail and operative for hoisting cable drums in said container and moving such drums both in horizontal and vertical direction in said container, and a cable-laying arrangement comprising cable payout means for paying out cable from one of the cable drums in said container; and measuring and testing means in said container operative for testing the operation of said communications system and the operation of said energy-distribution system when the latter are assembled.

3,843,910
COOLING SYSTEM FOR COMPONENTS GENERATING LARGE AMOUNTS OF HEAT

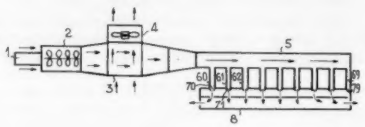
Jacques Ringuet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 10, 1972, Ser. No. 296,177

Claims priority, application France, Oct. 18, 1971, 71.37303

Int. Cl. H05k *7/20*

U.S. Cl. 317—100 **13 Claims**



1. In combination, a multiplicty of heat-generating electronic components, arrayed in a plurality of groups, and a cooling system for dissipating the generated heat, said cooling system comprising:

a heat exchanger provided with an inlet and an outlet for a gaseous fluid, blower means for driving said fluid, and cooling means for said fluid between said inlet and said outlet;

a supply manifold connected to said outlet for receiving said fluid therefrom;

a plurality of branch conduits extending from said supply manifold; and

a separate plenum chamber connected to each of said branch conduits and juxtaposed with a respective group of said components, each plenum chamber being provided with a multiplicity of calibrated discharge openings individually confronting the components of said group for training a cooling flow upon same.

3,843,911
CONTINUOUS FILM TRANSISTOR FABRICATION PROCESS

Arthur E. Horton, Richardson; Jordan W. Brantley, Hurst; Paul R. Smith, Dallas; Cecil W. Lightfoot, Dallas, and Richard L. Hanneman, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 24, 1969, Ser. No. 887,892

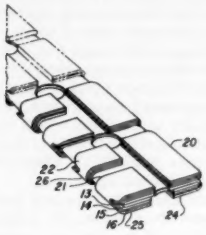
Int. Cl. H01l *1/14*

U.S. Cl. 357—67 **14 Claims**

1. A roll of substrate film comprised of:

a. a polymer film having two major surfaces coiled into a roll;

b. a plurality of groups of electrically conductive contact patterns adhered to one major surface of said polymer film, said film having turned-under edges to provide upper and lower portions of said one surface;
c. each contact extending on said upper and the lower portions of said one surface of the substrate film for



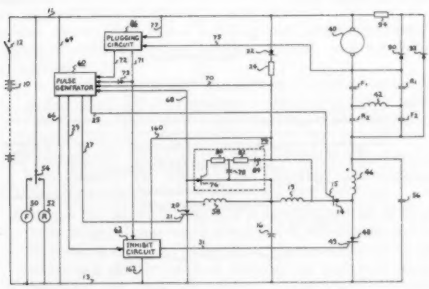
facilitating the ohmic connection of a portion of each contact to another metal contact on a support member; and
d. indexing means formed in the polymer film between each contact pattern for the continuous feeding of the roll of substrate film through a series of processing stations.

3,843,912

DIRECT CURRENT POWER CONTROL CIRCUIT

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Division of Ser. No. 231,487, March 3, 1972,. This application June 22, 1973, Ser. No. 372,485
Int. Cl. H02p 5/16
U.S. Cl. 318—258 **7 Claims**



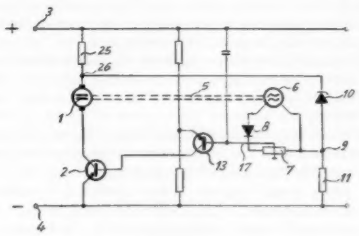
1. In a control circuit of the type in which the amount of power delivered to a direct current motor, having an armature and a field, from a direct current source in a traction mode is varied by varying the percentage of time said motor is connected to said source by a first switching device in series with said motor and source; means to provide a braking mode to said motor by reversing the relative direction of current through said armature and said field, said means including means to inhibit the rendering of said first switching device conductive while rendering a second switching device conductive at a controlled ratio of on time to off time to provide a plugging current to said motor through an alternative circuit path.

3,843,913

SPEED REGULATING ARRANGEMENT FOR DC MOTORS

Gerhard Schaub, Nurnberg, and Dietmar Rudolph, Heilbronn-Sontheim, both of Germany, assignors to Gebruder Buhler Nachfolger GmbH, Nurnberg, Germany

Continuation-in-part of Ser. No. 755,529, Aug. 27, 1968, abandoned. This application May 18, 1971, Ser. No. 144,216
Claims priority, application Germany, Sept. 13, 1967, 9442921
Int. Cl. H02p 5/16
U.S. Cl. 318—308 **11 Claims**

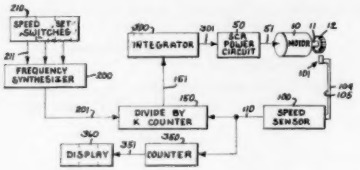


1. An arrangement for stabilizing the speed of a D.C. motor, comprising, in combination, first controllable electronic impedance means connected in the current path of the motor and having first control input means; second controllable electronic impedance means including output means connected to said first control input means and operative for controlling the impedance of said first impedance means in dependence upon the impedance of said second impedance means to thereby influence the speed of said motor, said second controllable electronic impedance means having respective second control input means, and said second impedance means further including impedance-monitoring means for generating a monitoring signal varying in dependence upon changes in the impedance of said second impedance means; speed-monitoring means coupled to the motor and operative for generating a speed signal varying in dependence upon motor speed, said speed-monitoring means including means coupled to the motor for producing a variable alternating voltage proportional in amplitude to the speed of said motor, a rectifier, a capacitor, a source of fixed direct reference voltage, a voltage divider having an adjustable tap, said voltage divider and said rectifier being connected in series with the means for producing alternating voltage and said capacitor being connected between said tap and one terminal of said source of fixed direct reference voltage, to provide across said voltage divider a direct feedback voltage variable in proportion to said motor speed; negative-feedback means connecting said tap to said control input means for applying to the latter a speed-dependent negative-feedback signal to vary the impedance of said second impedance means in response to changes in motor speed and accordingly vary the impedance of said first impedance means and cause changes in said monitoring signal indirectly indicative of changes in motor current, and also connecting said impedance-monitoring means to said second control input means for influencing said negative-feedback signal in indirect dependence upon changes in motor current, said negative-feedback means including electrical damping means operative for reducing the negative-feedback stabilizing action of said negative-feedback means in response to sudden and short-lasting changes in motor speed.

3,843,914
DIGITAL SPEED CONTROL SYSTEM

Robert T. Carlson, Mound, and Ralph E. Barr, Jr., Saint Paul, both of Minn., assignors to Detection Sciences Inc., Minneapolis, Minn.

Filed Oct. 30, 1972, Ser. No. 302,296
Int. Cl. H02p 5/16
U.S. Cl. 318—327 **5 Claims**



1. A programmable digital speed control system for controlling the speed of a motor, comprising:

a. adjustable means for receiving a speed command number and for providing speed command signals in response thereto having a frequency indicative of a desired motor speed;

b. means associated with said motor for providing speed pulses, the period between pulses being inversely proportional to the speed of the motor;

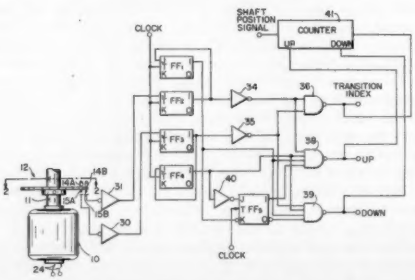
c. programmed counter means connected to receive said speed command signals and said speed pulses, said programmed counter means operable in a first state initiated by receipt of a speed pulse to count said speed command signals, and operable in a second state initiated by reaching a predetermined count to cease counting until receipt of the next speed pulse; and

d. a motor control circuit including integrating means connected to said programmed counter for integrating in one direction tending to decelerate the motor when said programmed counter is in said first state, and for integrating in the opposite direction tending to accelerate the motor when said programmed counter is in said second state, whereby the speed of the motor is caused to be adjusted so that the period of time between the reaching of the predetermined count and the next speed pulse is made to equal the period of time required for the programmed counter to count the predetermined number of pulses.

3,843,915
SERVO-MOTOR CONTROL SYSTEM INCLUDING A TWO PHASE DIGITAL SHAFT POSITION DETECTOR

James E. Helmbold, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 2, 1973, Ser. No. 329,268
Int. Cl. G05b 19/28
U.S. Cl. 318—602 **2 Claims**



1. Apparatus for providing signals indicating the direction and incremental rotation of a shaft comprising in combination:

a. a code element coupled to said shaft, said code element having a transition code thereon;

b. means for detecting and converting the code into a first and a second electrical signal, respectively, which signals have states corresponding to the transition code;

c. logic means for receiving said first and said second electrical signal and for providing a first and a second output signal having corresponding states, said logic means also providing a third and a fourth output signal indicating the state of said first and said second output signals respectively a fixed time interval later;

d. means responsive to said third and fourth output signals for providing a first and a second transition signal wherein said first transition signal is indicative of the occurrence of a preselected state of said third signal preceding a preselected state of said fourth signal, and said second transition signal is indicative of the occurrence of a preselected state of said fourth signal preceding a preselected state of said third signal:

e. first gate means receiving said first and said second output signal for providing an indexing signal upon each coincidence of said first and said second output signals;

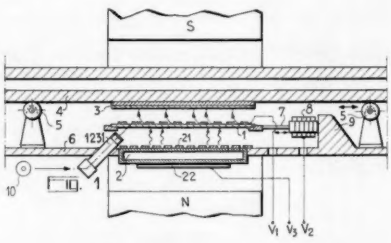
f. a second and third coincidence gate means for receiving said first, and said second output signals, respectively, said first and said second transition signals, respectively, and both of said third and fourth ouput signals, to provide a first direction signal at the output of said second coincidence gate when all signals received by said second coincidence gate are of one state and a second opposite direction signal at the output of said third coincidence gate when all signals received by said third coincidence gate are of one state; and

g. means for counting each of said indexing signals in an order determined by said first and second direction signals such that the accumulated count is proportional to the total rotation of said shaft.

3,843,916
MOTOR CONTROL FOR THE PRODUCTION OF MASKS FOR SUBMINIATURISED CIRCUITS

Jacques Trotel; Georges Guillot, and Bernard Fay, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 6, 1972, Ser. No. 269,421
Claims priority, application France, July 16, 1971, 71.26188
Int. Cl. G05b 1/06
U.S. Cl. 318—640 **9 Claims**



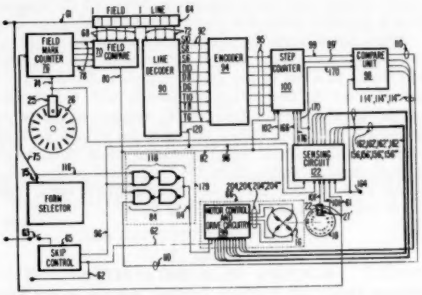
1. An electronic apparatus for the mass production of masks for integrated circuits, comprising a vacuum tight enclosure, and in said enclosure: a master mask, means for emitting diffuse ultra-violet radiations illuminating said mask, the unmasked parts thereof emitting electrons in response, a wafer covered with resin sensitive to electron bombardment located in a plane parallel to that of said master mask, means for producing an electric field and a magnetic field which are parallel to one another, and perpendicular to the plane of said master mask, in order to focus said electrons on said wafer, means being provided for maintaining said wafer at predeter-

mined location, electrically controlled mechanical means to make it possible to adjust with a predetermined degree of accuracy, the position of said master mask in relation to said wafer, and to compensate the lack of the focussing of said electrons on said wafer; said electromechanical means comprising two pairs of identical indexation marks respectively carried by said wafer and said master mask, means being provided to illuminate the two marks of said master mask, thus producing in response emission of electron currents towards said marks of said wafer, said marks of said wafer being constituted of zones implanted on said wafer, said zones being made of a material capable under the impact of electrons of emitting radiation, transducer comprising photomultipliers being provided for transducing said radiations into electrical signals, optical means being provided to direct said radiations onto said photomultipliers.

3,843,917
FORM INDEX PULSE GENERATOR

Paul R. Hoffman, Chantilly, Va., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 31, 1973, Ser. No. 411,317
Int. Cl. G05b *19/20, 19/40*
U.S. Cl. 318—696 **31 Claims**



1. A tapeless format control apparatus for controllably printing lines of information according to preselected formats on selected form lengths of a web paper in a printer, said printer having web paper handling and positioning means associated with a printing position thereof, said apparatus comprising:

a. a stepping motor for operatively advancing said web paper relative to said printing position, said motor being coupled to said web paper handling and positioning means,

b. motor control means associated with said stepping motor and effective for stopping and detenting said stepping motor,

c. means for selecting one of a predetermined plurality of form lengths upon which said lines of information are to be printed, said form length selecting means including: an elongated cylindrical gear coupled to said web paper handling and positioning means, a plurality of rotatably mounted and variable slotted gears of predetermined varied diameters gearably coupled to said elongated cylindrical gear, first slot sensing means associated with each of said plurality of slotted gears, and means for adjustably activating selected slots of selected ones of said slotted gears to thereby operatively represent a selected one of said plurality of form lengths,

d. first pulse generating means associated with said form length selecting means and responsive to the sensing of said adjustably activated selected slots to thereby identify the passage of said selected slots past said associated sensing means during the rotation of said selected gear and to identify the passage of corresponding selected form lengths past said printing position,

e. means for receiving and storing externally originated print spacing instructions,

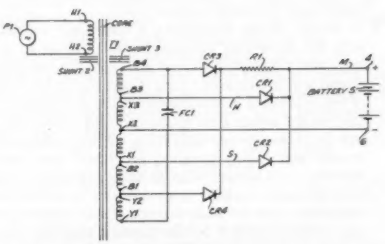
f. second and third pulse generating means respectively effective for identifying each increment of advancement of said web paper and each increment of rotational motion of said stepping motor according to a gray coded scheme,

g. means cooperating with said motor control means and responsive to said print spacing instructions for controllably coordinating said plurality of identifying pulses from said first, said second and said third pulse generating means such that each line of information printed on said selected form length is properly spaced from the preceding line and all of the lines of printed information conformed to a selected one of said preselected formats, said coordinating means including: sensing means responsive to said second pulse generating means effective for identifying each increment of rotational motion of said stepping motor and cooperating with said motor control means for allowing said stepping motor to increment only upon ascertaining that its preceding increment was properly executed, and first comparator means responsive to said print spacing instructions and interacting with said motor control means for controllably retarding the speed of said stepping motor as a print line on said selected form length of said web paper corresponding to said print spacing instructions approaches said printing position.

3,843,918
FERRORESONANT TRANSFORMER BATTERY CHARGER CIRCUIT

Earl C. Rhyne, Millis, Mass., assignor to Gould Inc., Mendota Heights, Minn.

Filed Nov. 15, 1973, Ser. No. 416,114
Int. Cl. H02j *7/04*
U.S. Cl. 320—23 **15 Claims**



1. A battery charger circuit for charging a battery from an AC power source, said battery charger circuit comprising

a ferroresonant transformer having a primary winding connected to an AC power source and a plurality of secondary windings;

a first rectifier circuit connected between the secondary windings of the transformer and one terminal of the battery for providing a first level of voltage;

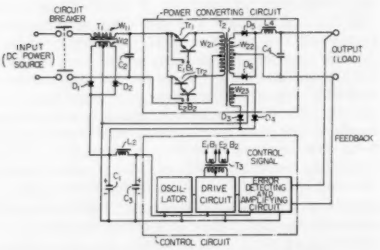
an impedance; and

a second rectifier circuit connected via the impedance in piggy-back with the first rectifier circuit between the secondary windings of the transformer and the one terminal of the battery for providing a second higher level of voltage thereby providing a close to ideal battery charger characteristic, the impedance comprising a resistor connected between the second rectifier circuit and the battery for determining the finish rate current of the battery charger characteristic and the start rate of the battery charger characteristic being determined by the inherent ferroresonant transformer characteristic.

3,843,919
DC-TO-DC CONVERTER

Hisashi Yamamura, and Katuo Hosoi, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 12, 1973, Ser. No. 378,714
Claims priority, application Japan, July 20, 1972, 47-72073
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **4 Claims**



1. In a DC-to-DC converter having the input and output sides insulated from one another and comprising a DC power source, an electronic power converting circuit, a control circuit for controlling said electronic power converting circuit, an electronic power supply circuit for said control circuit for starting the electronic power converting circuit and a load,

the electronic power supply circuit for the control circuit comprising

a. a first means comprising a reactor having the primary and secondary windings, said primary winding being connected in series with one of power lines on the input side of the power converter, and said secondary winding being adapted to take out an energy in response to a rush current at the time of the application of a DC input from the power source, and

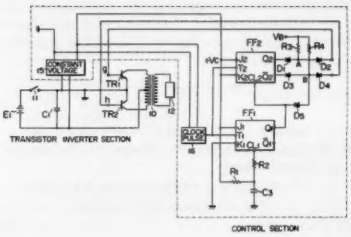
b. a second means comprising a condenser connected with the secondary winding of said reactor so as to store said energy and to feed the energy to the control circuit and a means of taking a part out of the output of the electronic power converting circuit and feeding said partial output continuously to said condenser and the electronic power converting circuit comprising a transformer having primary, secondary and tertiary windings, said tertiary winding being connected at both ends through a rectifier to the positive terminal of said condenser, and the neutral point of said tertiary winding being connected to the negative terminal of said condenser.

3,843,920
INVERTER CONTROLLING CIRCUIT

Tsuneo Awano; Kazutoshi Onishi, both of Yokohama, and Isao Masuzawa, Saitama-ken, all of Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

Filed July 24, 1973, Ser. No. 382,202
Claims priority, application Japan, July 26, 1972, 47-87985
Int. Cl. H02m *7/52*
U.S. Cl. 321—44 **2 Claims**

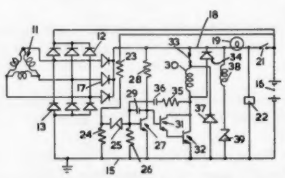
1. In an inverter for periodically switching a D.C. source circuit by a first switching element controlled by a first signal and a second switching element controlled by a second signal so as to supply alternating current to a load, an inverter controlling circuit comprising a pair of first and second master-slave flip-flop circuits each provided with input terminals J, T and K, a clear terminal CL and output terminals Q and Q, wherein the J terminal of the first master-slave flip-flop circuit and the J and K terminals of the second master-slave flip-flop circuit are connected together to be supplied with a "1" signal when the switching elements are impressed with the D.C. source voltage, the T terminals of the first and second master-slave flip-flop circuits are connected together to be supplied with a clock pulse, the K terminal of the first master-slave flip-flop circuit is kept at a "0" level, and the Q terminal of the first master-slave flip-flop circuit is connected to the CL terminal of the second master-slave flip-flop circuit; a time constant circuit which is energized when the jointly connected terminals J, T and K of the paired master-slave flip-flop circuits are supplied with "1" signal and, after the prescribed length of time after said energization, delivers a "1" signal to the CL terminal of the first master-slave flip-flop circuit; and a control signal supplying circuit which is connected to the Q and Q terminals of the second master-slave flip-flop circuit and the Q terminal of the first master-slave flip-flop circuit and supplies the first switching element with a first signal consisting of an output from the Q terminal of the second master-slave flip-flop circuit and also the second switching element with a second signal consisting of an AND output derived from an output from the $\overline{Q}$ terminal of the second master-slave flip-flop circuit and an output from the Q terminal of the first master-slave flip-flop circuit.



3,843,921
BATTERY CHARGING SYSTEMS

William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Aug. 24, 1973, Ser. No. 391,273
Claims priority, application Great Britain, Jan. 9, 1972, 40614/72
Int. Cl. H02j *7/16*
U.S. Cl. 322—28 **20 Claims**

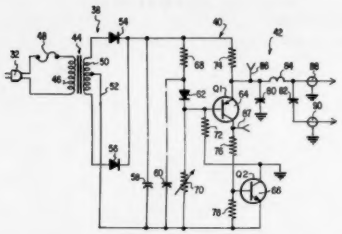


1. A battery charging system comprising a wound field alternator for charging the battery, a voltage regulator for controlling the output of the alternator by varying the current flow in the field winding of the alternator, a first freewheel path connected across said field winding and permitting continued flow of current in said field winding when the supply to the field winding is interrupted, a second freewheel path across said field winding and having a substantially higher rate of dissipation than the first freewheel path, and means operable when the output voltage of the alternator exceeds a predetermined value in excess of the regulated value for disconnecting the first freewheel path whereby current flows through the second freewheel path.

3,843,922
TELEVISION PREAMPLIFIER POWER SOURCE

Hansel B. Mead, Melbourne, Fla., assignor to Q-Bit Corporation, Melbourne, Fla.

Filed July 5, 1972, Ser. No. 269,207
Int. Cl. G05f 1/58
U.S. Cl. 323—8 17 Claims

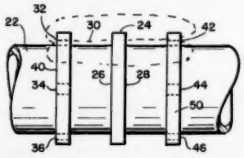


1. A power supply comprising a source of direct current, first and second D.C. output terminals, a first regular transistor coupled across said source, said first transistor having one side coupled to both said first output terminal and one side of said source whereby said first transistor acts as a shunt regulator, a second current foldback transistor coupling said second output terminal to the other side of said source, and means coupling said transistors together whereby the impedance of said second transistor is controlled by said first transistor.

3,843,923
WELL PIPE JOINT LOCATOR USING A RING MAGNET AND TWO SETS OF HALL DETECTORS SURROUNDING THE PIPE

Douwe deVries, and Charles W. Calhoun, both of Houston, Tex., assignors to Jim C. Stewart & Stevenson, Inc., Houston, Tex.

Filed July 5, 1973, Ser. No. 376,523
Int. Cl. G01r 33/12
U.S. Cl. 324—34 R 2 Claims

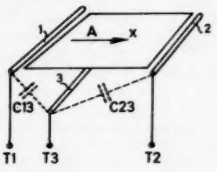


1. A pipe joint locator for well pipe comprising,
a tubular housing through which pipe and connecting joints may be moved,
a ring magnet positioned about the housing for producing a magnetic field axially through the housing,
a first set of four Hall effect detectors circularly positioned about the outside of said housing and spaced on one side of the ring magnet for measuring a deflection of the magnetic field caused by the movement of a pipe joint through the magnetic field,
a second set of four Hall effect detectors circularly positioned about the outside of said housing and spaced on the second side of the ring magnet for measuring a deflection of the magnetic field caused by the movement of a pipe joint through the magnetic field,
the output of the first set of detectors being combined,
the output of the second set of detectors being combined, and
means connected to said outputs for determining the location of any pipe joints moving through the locator.

3,843,924
APPARATUS FOR DETERMINING THE COORDINATES OF AN OBJECT, MOVEABLE ALONG AT LEAST ONE COORDINATE AXIS

Bjorn Wahlgren, Sodertalue, Sweden, assignor to Farad AB., Hagersten, Sweden

Continuation of Ser. No. 290,696, Sept. 20, 1972, abandoned.
This application Feb. 15, 1974, Ser. No. 442,853
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 2 Claims

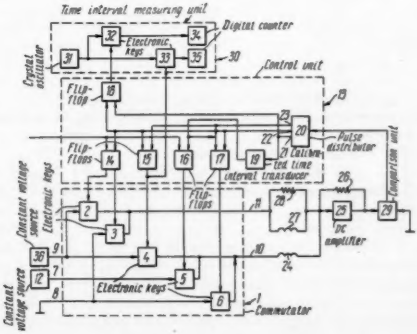


1. Apparatus for determining at least one coordinate of a living organism moveable over a plane surface, characterized in, that the apparatus for each coordinate determination comprises three parallel rod-shaped capacitance electrodes, two of said electrodes arranged perpendicular to the respective coordinate axis along two opposite sides of the surface and outside said surface and the third rod-shaped electrode arranged in parallel with said first electrodes, and at equal distance from said electrodes but not in the same plane as these electrodes, said electrodes to be connected in an electrical circuit from which the object to be measured is excluded for measuring differences in values of capacity between one of the three electrodes and each of the respective remaining electrodes, the difference of capacitance between each of said first electrodes and said third constituting a measure of the coordinate of the object.

3,843,925
METHOD FOR MEASURING PARAMETERS OF COMPLEX ELECTRIC CIRCUIT COMPONENTS AND DEVICE FOR EFFECTING SAME

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv.62; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv.5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv.17, all of Penza, U.S.S.R.

Filed June 11, 1973, Ser. No. 368,684
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 5 Claims



1. A method for measuring parameters of complex electric circuit components consisting in the application of a constant

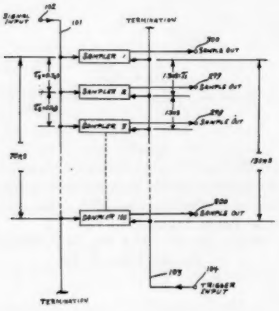
voltage directly across the input of a complex electric circuit whose components are connected in parallel; summing up of a current flowing through the components of said complex electric circuit with the linearly changing reference current of the opposite direction, whose alteration rate is selected such as to provide a coincidence of the direction of alteration of the total current with that of said reference current; reading off a calibrated time interval from the mement said total current attains a preset value, whereupon the alteration of said linearly changing reference current is discontinued; cutting off said constant voltage as the total current attains a preset value; measuring the time interval between the moment of starting the reading off of said calibrated time interval and that of cutting off said constant voltage; summing up of the current obtained after said constant voltage is cut off with other linearly changing reference current, the direction of whose alteration is opposite to that of said linearly changing reference current; measuring the time interval between the moment of cutting off said constant voltage and the moment the total current attains a preset value, the values of said time intervals being used for determining parameters of components of said complex electric circuit.

3,843,926

ELECTRONIC SAMPLING SYSTEM

Walter C. Espenlaub, Syosset, and Anthony D. Leotta, Holbrook, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 2, 1972, Ser. No. 223,035
Int. Cl. G01r *27/28*
U.S. Cl. 324—102 **2 Claims**



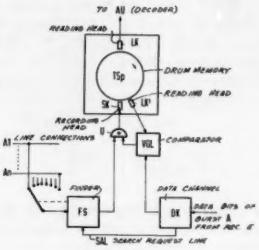
1. An electronic sampling system comprising a multiplicity of samplers in parallel arrangement, each of said samplers having a signal input, a trigger input, and providing a sample output signal in response to a trigger input signal, a coaxial signal line, an input terminal for said coaxial signal line receiving a transient signal available once for sampling, each of said signal inputs being spaced along said coaxial signal line at a first predetermined time interval beginning with the first sampler connected to the signal input terminal and ending at the last sampler, a coaxial trigger line, an input terminal for said coaxial trigger line receiving a trigger signal, each of said trigger inputs being spaced along said coaxial trigger line at a second predetermined time interval beginning with said last sampler connected adjacent to the trigger input terminal and ending with said first sampler, with the trigger timing being such that the sample feed through has passed beyond the next sampler before the sample pulse begins and including means to pass said signal and trigger signals in opposite directions along said multiplicity of samplers resulting in a total sampled interval that is the sum of the electrical length of the signal and trigger lines.

3,843,927

TIME MULTIPLEX TRANSMISSION SYSTEM

Manfred Hanni, Muenchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 861,077, Sept. 25, 1969, abandoned. This application Mar. 24, 1972, Ser. No. 237,995
Claims priority, application Germany, Sept. 30, 1968, 1762955
Int. Cl. H04m *7/16*
U.S. Cl. 325—4 **12 Claims**



1. In a time multiplex transmission system of the type having a large number of station channels, wherein satellite connections are to be established between certain station channels and an exchange is assigned to each station and operated to connect the channels available at a station to the telephone lines serving the exchange via connections between the station and the exchange, wherein a time section is assigned to each transmitting station within the pulse frame of the time multiplex system, and wherein an internal signal channel is included within each time section prior to the code words of the respective channels and contains data identifying a called station channel to be connected through to a calling station channel, and wherein in the receiving station a series-parallel converter is provided for the time multiplex signal there arriving and operated to transmit, during the conversion time of said serial to parallel converter, code words into a plurality of buffer memories for evaluation in the receiving station, which code words are to be supplied to the associated exchange, each said buffer memory being associated with an individual time multiplex channel, the improvement comprising: a control and switch system in said receiving station connected to the associated exchange and connected to receive data from the data channel and including means for finding an available connection between said station and its associated exchange in response to receipt of signals in the data channel identifying the station channel; and means for connecting one of said buffer memories between said available connection and said series-parallel converter during respective times of the subsequent periodically occurring code words.

3,843,928

FM DEMODULATION SYSTEM PROVIDING NOISE REDUCTION PROPERTY

Katsutoshi Nishimura, Osaka, and Kiyoji Fujisawa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 20, 1973, Ser. No. 381,334
Claims priority, application Japan, July 28, 1972, 47-76161; July 28, 1972, 47-76162
Int. Cl. H04b *1/10*
U.S. Cl. 325—348 **4 Claims**

1. An FM demodulation system for accomplishing noise reduction comprising:

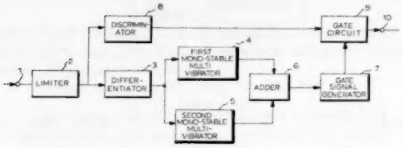
a limiter which receives an input frequency modulated signal to be demodulated and eleminates an amplitude variation in the input frequency modulated signal;

a demodulation means coupled to said limiter for demodulating said input frequency modulated signal;

a differentiator connected to the output of said limiter, said differentiator differentiating the output of said limiter and forming a narrow pulse train having positive and negative spikes;

a first mono-stable-multivibrator which is coupled to the output of said differentiator and is triggered by the positive spikes of the pulse train from said differentiator;

a second mono-stable multivibrator which is coupled to the output of said differentiator and is triggered by the negative spikes of the pulse train from said differentiator, the output pulses of said first and second mono-stable-multivibrators having a pulse-width with a length of time slightly shorter than the interval of the zero crossing points of said input frequency modulated signal where the frequency deviation of said input frequency modulated



signal becomes a maximum in a negative direction; an adder coupled to said mono-stable-multivibrators for adding said output pulses of said mono-stable-multivibrators;

a gate signal generator coupled to said adder for generating a gate signal according to the added output from said adder; and

a gate circuit which is coupled to the output of said demodulation means and which has a control terminal coupled to said gate signal generator to receive said gate signal from said gate signal generator, said gate circuit passing the signal from said demodulating means when said gate signal is not present at said control terminal and preventing said signal from passing when said gate signal is present at said control terminal, whereby a demodulated signal in which the noise component is eliminated appears as output of said system.

3,843,929

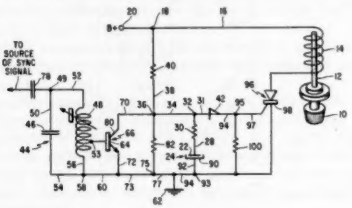
AUTOMATIC T.V. SHUT-OFF DEVICE RESPONSIVE TO ABSENCE OF SYNC. SIGNAL

Louis F. Mayle, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Continuation of Ser. No. 675,664, Oct. 16, 1967, abandoned. Filed Aug. 21, 1970, Ser. No. 66,093

Int. Cl. H04b *1/16;* **H04n** *5/44*

U.S. Cl. 325—392 **9 Claims**



1. An apparatus for automatically turning off a television set having an on-off switch, said on-off switch controlling the source of electrical energy for both said television set and said apparatus comprising:

manually operable means for moving said switch to the on position;

electrical means associated with said switch and energizable for moving said switch to the off position thereof;

a capacitor in circuit with said electrical means operable when charged to a predetermined voltage level to cause momentary energization of said electrical means;

a charging circuit connected to said capacitor operable to charge said capacitor at a predetermined rate, said charging cicuit being a purely passive circuit connected to a direct current potential difference within the television set;

a discharging circuit connected to said capacitor;

said charging circuit being under the control of said switch and initiating charging of said capacitor upon movement of said switch to the on position thereof so that a predetermined time after movement of said switch to the on position thereof said capacitor will be charged to said predetermined voltage level unless previously discharged via said discharging circuit;

said discharging circuit comprising a transistor having the collector-emitter path thereof connected in shunting relation to said capacitor;

a tank circuit coupled to the base of said transistor and operable when energized at the resonant frequency thereof to supply signals to the base of said transistor to make said transistor conductive and thereby discharge said capacitor at a rate not less than the rate at which said capacitor is charged by said charging circuit, whereby, when both said charging and said discharging circuits are operating, said capacitor is prevented from charging;

said tank circuit being connected to the television set to receive therefrom a signal received by the television set, whereby, when said television set signal ceases, said discharging circuit becomes inoperative allowing said charging circuit to charge said capacitor thus energizing said electrical means so as to turn said television set and said apparatus off;

said tank circuit having as the said resonant frequency a frequency equal to n times the frequency of occurrence of synchronizing pulses in the received signal, wherein *n* is a whole number greater than one.

3,843,930

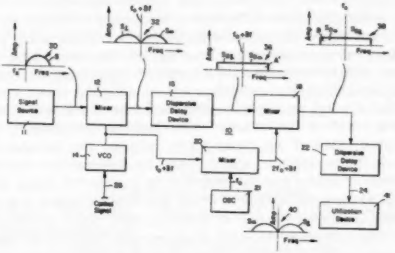
TIME DELAY CONTROLLER CIRCUIT FOR REDUCING TIME JITTER BETWEEN SIGNAL GROUPS

Joseph Burnsweig, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 231,192, March 2, 1972, Pat. No. 3,771,062. This application Aug. 20, 1973, Ser. No. 389,755

Int. Cl. H03b *3/04*

U.S. Cl. 328—155 **7 Claims**



1. A time delay controller circuit for reducing time jitter between successive signal groups of the type wherein each group includes a synchronization pulse and a reference frequency pulse, said controller circuit comprising:

time delay means for imposing a time delay on signals pro-

cessed therethrough as a function of a control signal applied thereto;

means for producing a first signal indicative of the time between the synchronization pulse of the input signal group to said time delay means, and the synchronization pulse of the output signal group from said time delay means;

means for producing a second signal indicative of the phase difference between the reference frequency pulse of the input signal group to said time delay means and the reference frequency pulse of the output signal group from said time delay means; and

means for combining said first and second signals to form said control signal;

means for providing a logic signal when said control signal is less than a preselected value; and means responsive to said logic signal, for coupling the output of said time delay device to an output circuit only during time periods in which said control signal is less than said preselected value; whereby

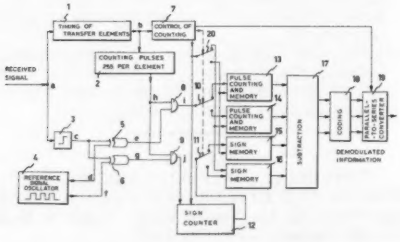
the time delay imposed on each signal group within said time delay means is controlled so as to reduce the time jitter between the signal groups.

3,843,931

METHOD FOR DEMODULATION OF A DIFFERENTIALLY PHASE-MODULATED SIGNAL

Risto Martti Sarkilahti, Haukilahti, Finland, assignor to Oy Nakia Ab

Filed Mar. 13, 1973, Ser. No. 340,835
Claims priority, application Finland, Mar. 17, 1972, 732/72
Int. Cl. H04l 27/22
U.S. Cl. 329—104 **7 Claims**



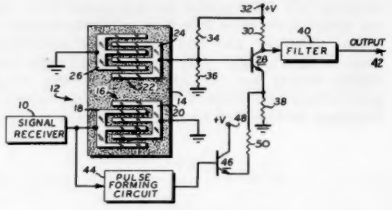
1. A method for demodulation of a differentially phase-modulated signal in a receiver, comprising: measuring digitally the phase of the signal as received during each information-transfer element in relation to an independent reference signal, storing the phase difference in numerical form in a memory, subtracting the phase differences measured during two subsequent signal elements from each other, measuring the phase difference between the received signal and the reference signal by first shaping them into rectangular waves which are fed through an Exclusive-Or circuit, the share of the time of the 1-state of the obtained signal being proportional to the absolute value of the phase angle between the rectangular waves, measuring the ratio digitally by developing a certain number of pulses and by counting the number of pulses that occur at the point of time at which the obtained signal is in the 1-state, obtaining the sign of the phase difference by comparing with each other the received signal and a signal in an angle of +90° to the reference signal, storing the measured phase angle as bits as well as the said sign for the time of the next transfer element, at which time a new measurement is carried out to another memory, and when the new values have been obtained, calculating their difference whereby the conclusion is drawn in accordance with to which expected phase difference it is closest.

3,843,932

WIDE BAND FREQUENCY MODULATION DETECTOR

Martin Fischman, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 14, 1973, Ser. No. 415,507
Int. Cl. H03d 3/16
U.S. Cl. 329—117 **9 Claims**



1. A frequency modulation detector comprising:

means for providing a frequency modulated signal;

a surface wave device having a piezoelectric substrate, an input transducer disposed on said substrate and coupled to said means for providing a frequency modulated signal, and at least one output transducer disposed on said substrate and spaced from said input transducer by a distance corresponding to a predetermined time delay;

a product detector connected to said output transducer for receiving a delayed signal representative of said frequency modulated signal; and

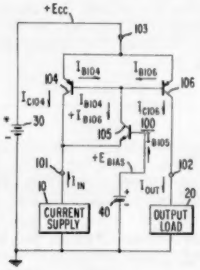
means connected between said means for providing a frequency modulated signal and said product detector for coupling a signal representative of said frequency modulated signal to said product detector, said product detector detecting the frequency modulations of said delayed signal.

3,843,933

CURRENT AMPLIFIER

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,723
Int. Cl. H03f 1/34
U.S. Cl. 330—26 **17 Claims**



1. A current amplifier comprising:

an input, an output and a common terminals;

a first and a second transistors of like conductivity type, each having an emitter electrode direct current conductively coupled to said common terminal by means other

than said first and said second transistors themselves for maintaining each emitter electrode at a potential referred to and dependent upon the potential at said common terminal, and each having a base and a collector electrodes;

means for direct current conductively coupling said first transistor collector electrode to said input terminal;

means for direct current conductively coupling said second transistor collector electrode to said output terminal; and

a third transistor being of opposite conductivity from said first and said second transistors, having an emitter electrode direct current conductively coupled to said input terminal, having a collector electrode direct coupled to each of said first and said second transistor base electrodes, and having a base electrode direct coupled to said second transistor collector electrode and responsive to the signal present thereat.

3,843,934

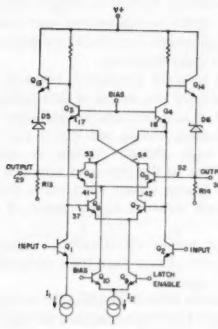
HIGH SPEED TRANSISTOR DIFFERENCE AMPLIFIER

James N. Giles, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 31, 1973, Ser. No. 328,417

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **2 Claims**



1. A high speed transistor differential amplifier comprising, first and second symmetric circuit branches, each having respective first and second transistors connected in series in a high input-output isolation configuration, each of said transistors having a signal input electrode, a signal output electrode and a common electrode; said first and second transistors connected with a signal output electrode of each first transistor connected to the signal input electrode of each second transistor,

a pair of input terminal means for connecting an input signal across respective signal input electrodes of the first transistors of each branch,

means for producing said input signal across said first and second circuit branches between said first and second transistors,

a first cross-connected pair of transistors, each of said transistors having a signal input electrode connected to a respective branch between said first and second transistors and each having a respective output electrode connected to an electrode of the second transistor of the branch opposite to which the respective input electrode is connected,

a pair of output terminals, each associated with a respective circuit branch, and

a latch means connected to said first and second circuit branches for maintaining the output of said circuit in a stable condition, said latch means comprising a second cross-connected pair of transistors, each of said transistors having a first electrode connected to one of said output terminals, and a second electrode connected to a circuit branch opposite said first electrode, between said first and second transistors, thereby providing positive feedback from an output terminal to a respective circuit branch.

3,843,935

DIFFERENTIAL AMPLIFIER

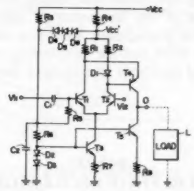
Kunio Seki, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,288

Claims priority, application Japan, Mar. 21, 1972, 47-27396

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **5 Claims**



1. In a differential amplifier circuit having:

first and second transistors, each having a base, an emitter, and a collector;

first and second input terminals connected to couple first and second input signals to the bases of said first and second transistors, respectively;

a first constant current source connected to the emitters of each of said transistors;

a power supply terminal to which a supply voltage for said amplifier is applied;

output means, connected to the collectors of said first and second transistors for providing an output signal representative of the amplified difference of said first and second signals applied to said first and second input terminals; and

means for coupling the supply voltage applied to said power supply terminal to said first and second transistors;

the improvement comprising:

means, connected to said coupling means, for attenuating an alternating current component of the supply voltage applied to said power supply terminal, and substantially preventing said alternating current component of said supply voltage from being supplied to said first and second transistors, comprising a third transistor having a base, an emitter and a collector, the collector of which is connected to said power supply terminal and the emitter of which is resistively coupled to the collectors of said first and second transistors, with a resistor being connected between the collector and base of said third transistor and a capacitor being connected between the base of said third transistor and a reference potential terminal.

3,843,936

STABILIZED OSCILLATOR

Friedrich Kauderer, Winibaldstrasse 24, 8190 Wolfratshausen, Germany

Filed Oct. 1, 1973, Ser. No. 402,370

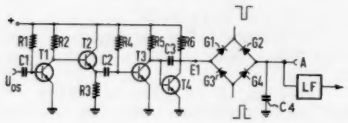
Claims priority, application Germany, Sept. 29, 1972, 2247974

Int. Cl. H03b *3/04*

U.S. Cl. 331—20 **7 Claims**

1. In a stabilized oscillator having a circuit for stabilizing the frequency and phase of the oscillator, the combination com-

prising a pulse shaper to provide an output wave form for each cycle of said oscillator, said wave form including a sloping portion having a substantial duration which is independent of the frequency of said oscillator and a non-sloping portion having a duration which is dependent on the frequency of said



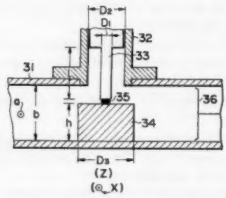
oscillator, whereby the arithmetic mean value of said wave form is a function of the frequency of said oscillator, and sampling means for periodically sampling the instantaneous level of said wave form and for developing a control voltage for controlling said oscillator in response thereto.

3,843,937

SOLID STATE OSCILLATOR

Hiromu Hayashi, Kawasaki; Takaya Fujita, Tokyo, and Naoto Tanabe, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 26, 1972, Ser. No. 318,628
Claims priority, application Japan, Dec. 28, 1971, 46-3296
Int. Cl. H03b 7/14
U.S. Cl. 331—101 **6 Claims**



1. A solid state oscillator comprising:

a waveguide having first and second pairs of opposite walls, a coaxial side arm attached at right angles to one of the side walls of one said pair thereof and defining a corresponding, intersecting portion of the waveguide,

means projecting from one of said side walls of said given pair toward the other side wall in the said intersecting portion of the waveguide for reducing the effective dimensions of said waveguide in said intersecting portion thereof,

said coaxial side arm having an inner conductor extending at its free end into said reduced dimension, intersecting portion of the waveguide,

a solid state oscillation device mounted on the said free end of said inner conductor, and

a short-circuiting plunger mounted for selective, variable positioning within said waveguide adjacent said intersecting portion thereof,

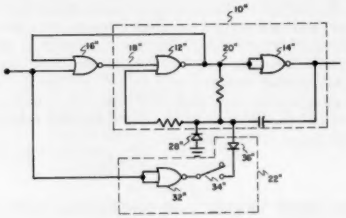
the length of said inner conductor being selected in accordance with a desired oscillation frequency of said solid state oscillator and the position of said plunger being selected to determine independently of the said oscillation frequency, the output power level of said oscillator.

3,843,938

GATED CLOCK MULTIVIBRATOR

David L. Bergman, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 9, 1973, Ser. No. 340,612
Int. Cl. H03b 5/24
U.S. Cl. 331—108 D **5 Claims**



1. A pulse generating circuit comprising:

a stable multivibrator including a first and second logic elements each having two inputs and a single output, said first logic element having its output electrically coupled to the two inputs of said second logic element;

output terminal means electrically coupled to the output of said second logic element;

first feedback network electrically coupled to feed an electrical signal from the output of said second logic element to an input of said first and second logic elements;

third logic element having two inputs and a single output, said third logic element having its output electrically coupled to one of the inputs of said first logic element;

an electronic gating means electrically coupled from said first feedback network to the input of said third logic element;

input terminal means electrically coupled to one of the input terminals of said third logic element for receiving a pulse input signal;

second feedback means electrically coupling the output signal of said first logic element to one of the inputs of said third element;

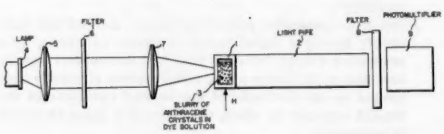
whereby an input pulse of predetermined time duration at the input of the third logic element allows the astable multivibrator to generate output pulses of equal time duration during the time period of the input pulse.

3,843,939

METHOD AND APPARATUS FOR MODULATING LIGHT WITH A MAGNETIC FIELD

Ronald Parke Groff, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1972, Ser. No. 249,802
Int. Cl. H01s 3/10
U.S. Cl. 332—7.51 **9 Claims**



1. Method of producing electromagnetic radiation in accordance with a magnetic field which comprises

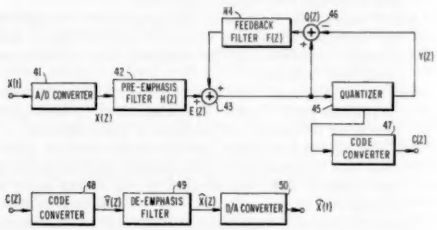
a. contacting at least one surface of a crystalline material in which triplet excitons can be generated with a sensitizing dye free of fluorescence quenching agents for dye fluorescence,

b. illuminating said surface with exciting radiation absorbed by said sensitizing dye whereby triplet excitons are generated in said crystalline material,
c. applying said magnetic field to said surface; and
d. detecting electromagnetic radiation emitted by said crystalline material whereby essentially maximum decrease in the intensity of emitted electromagnetic radiation is achieved at magnetic fields less than 1,000 oe.

3,843,940
DIFFERENTIAL PULSE CODE MODULATION TRANSMISSION SYSTEM

Tatsuo Ishiguro, and Yukihiko Iijima, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,735
Claims priority, application Japan, Oct. 11, 1972, 47-102159
Int. Cl. H03k *7/00*
U.S. Cl. 332—9 R **6 Claims**



1. A differential pulse code modulation transmission system for a frequency division multiplexed signal having a subcarrier signal, comprising: a transmitter including,

A. a pre-emphasis filter, whose transfer function H assumes a minimum value nearly equal to zero in the vicinity of the frequency of said subcarrier signal, and which delivers a prediction error signal determined by said transfer function H,

B. a noise feedback PCM coder, coupled to the output of said preemphasis filter, having (a) an adder for calculating the sum of the output of said pre-emphasis filter and an adding input signal, (b) a quantizer for quantizing the output of said adder to deliver quantized signals each representing the input signal thereof ranging within the respective predetermined quantizing range, (c) a subtractor for calculating the difference between the input and output of said quantizer, and (d) a noise feedback filter whose transfer function F is set so that the value (1–F) assumes a minimum value nearly equal to zero in the vicinity of the frequency of said subcarrier signal, and which delivers said adding input signal, and

C. a code converter for applying a code conversion to said quantized signals thereby to transmit a differential pulse code modulation signal corresponding to said frequency division multiplexed signal to a receiver via a transmission line; and said receiver including,

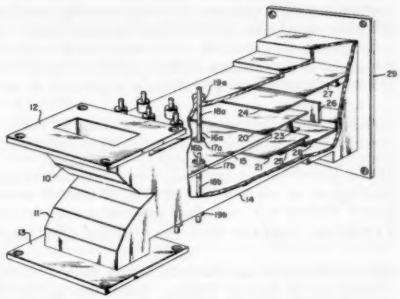
D. a code converter for receiving the transmitted differential pulse code modulation signal, and for regenerating said quantized signals, and

E. a decoder, coupled to the last-mentioned code converter, which has the inverse transfer function of said transfer function H, thereby to regenerate said frequency division multiplexed signal.

3,843,941
TWO-TO-THREE PORT PHASE CONVERTER

Thomas Hudspeth, Malibu, and Herbert T. Suyematsu, Los Angeles, both of Calif., assignors to Hughes Aircraft Corporation, Culver City, Calif.

Filed Oct. 4, 1973, Ser. No. 403,368
Int. Cl. H01p *5/12*
U.S. Cl. 333—9 **7 Claims**

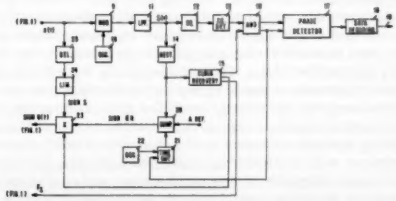


1. A microwave network comprising, in combination:
a pair of input ports,
means for coupling signal energy to said input ports, said signal energy at said input ports having components which are mutually in-phase and mutually out-of-phase; at least three output ports;
means for coupling said input ports to said output ports, said means comprising the serial combination of a phase correction network and an impedance transformer;
said phase correction network being adapted to shaft the phase of said in-phase components with respect to the phase of said out-of-phase components; and
said impedance transformer being adapted to transform the in-phase components of the phase-corrected signal energy into three in-phase output components and to transform the out-of-phase components of the phase-corrected signal energy into two out-of-phase output components.

3,843,942
EQUALIZER FOR PHASE MODULATION COMMUNICATION SYSTEMS USING THE INSTANTANEOUS SIGNAL AMPLITUDE WEIGHTED BY SIGNAL ENVELOPE AMPLITUDE DISTORTION AS AN ADJUSTMENT CONTROL SIGNAL

Jean-Marc Pierret, Nice; Alex Honore Lautier, Vence; Francis Paul Maddens, Cagnes sur Mer, and Henri Jean Nussbaumer, La Gaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,413
Claims priority, application France, Apr. 26, 1972, 72.15578
Int. Cl. H03h *7/16;* **H04b** *3/04*
U.S. Cl. 333—18 **7 Claims**



1. A method for equalizing the transmission of a PSK-modulation transmitted data signal onto a transmission me-

dium introducing linear distortions into the transmitted signals, of the type which includes the steps of subjecting the distorted signal received from the transmission medium to the action of a variable transfer function transversal filter so as to obtain an equalized signal, generating an adjustment error signal by comparing the equalized signal to a reference signal at instants determined by a sampling clock producing signals at the data transmission rate and adjusting the transfer function of the transversal filter so as to tend to minimize said adjustment error signal,

characterized in that the step for generating an adjustment error signal includes the following operations:

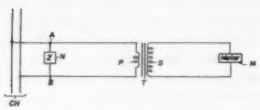
comparing the amplitude of the envelope of said equalized signal at first instants determined by the sampling clock with a reference amplitude so as to generate an envelope error signal;

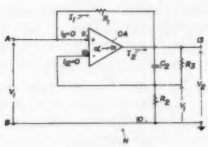
multiplying at second instants determined by the sampling clock said envelope error signal with the equalized signal so as to generate an adjustment error signal.

3,843,943
COUPLING CIRCUIT FOR TELEPHONE LINE AND THE LIKE

Nicola Montefusco, and Marcello Manca, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed Feb. 28, 1973, Ser. No. 336,717
Claims priority, application Italy, Feb. 29, 1972, 21157/72
Int. Cl. H03h *7/00;* **H04m** *3/22*
U.S. Cl. 333—24 R **5 Claims**



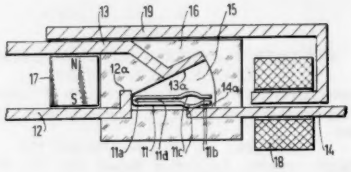


1. A coupling circuit for connecting a load to a low-frequency communication channel, comprising a transformer with a primary winding connected across a pair of supply terminals and a secondary winding connected across a pair of load terminals, and a two terminal network connected between said supply terminals in shunt with said primary winding, said network having a negative impedance with an inductive component whose absolute magnitude is on the order of that of the inductance of said primary winding, said network comprising: an operational amplifier with an inverting input terminal, a noninverting input terminal, an output terminal and a common reference terminal; a first resistor connected between said noninverting input terminal and said output terminal; a capacitor connected between said output terminal and said inverting input terminal; and a second resistor connected between said inverting input terminal and said common terminal.

3,843,944
ELECTROMAGNETIC RELAY AND FREE ARMATURE THEREFOR

Peter Kupec, and Ulf Rauterberg, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Mar. 21, 1973, Ser. No. 343,190
Claims priority, application Germany, Mar. 22, 1972, 2213970; Mar. 22, 1972, 2213936
Int. Cl. H01h *1/16*
U.S. Cl. 335—196 **12 Claims**



1. In an electromagnetic relay,

a free elongated magnetic armature serving as a magnetic and electric bridging element and having a convex freely rolling end and opposite contact surfaces spaced along said armature from said rolling end,

a pole member having a plane engaging surface engaged by said rolling end of said armature and forming a base therefor and directing the magnetic flow toward and along said armature,

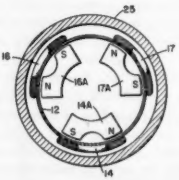
two spaced opposite pole members spaced from said first-mentioned pole member and adapted to be alternately contacted by the contact surfaces of said armature,

said opposite pole members having contact surfaces spaced from said first-mentioned pole member and located at an ideal impact level with respect to the rolling point of engagement of said armature with said first pole member, and the points of engagement between said armature and pole members being in the form of convex protrusions assuring the contact of said armature along the ideal impact level between said armature and pole members.

3,843,945
TEMPERATURE COMPENSATION OF ELECTROMAGNETIC DEVICE

Menno G. Koning, Dover, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed June 14, 1973, Ser. No. 369,946
Int. Cl. H01f *7/00*
U.S. Cl. 335—217 **5 Claims**



1. In an electromagnetic device having a generator of electrodynamic force which includes at least a first coil composed of material having a known temperature coefficient of resistance, said first coil having a known number of turns, apparatus for minimizing variations in said electrodynamic force caused by fluctuations of temperature over a predetermined range of temperature comprising a second coil wound in

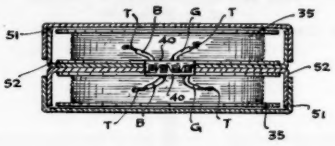
parallel with said first coil, said second coil being compressed of material having a temperature coefficient of resistance and having a number of turns different from those of said first coil, said second coil and said first coil being complementary in constant torquer scale factor over said predetermined range of temperature.

3,843,946

DUAL BOBBIN ASSEMBLY FOR COILS

David S. Anderson, and Lawrence F. Kottke, both of McHenry, Ill., assignors to Original Equipment Motors Inc., Crystal Lake, Ill.

Filed Oct. 5, 1973, Ser. No. 404,377
Int. Cl. H01f *15/10*
U.S. Cl. 336—90 **15 Claims**



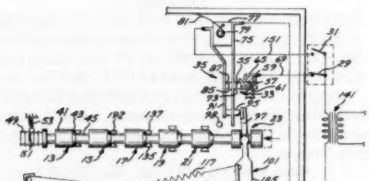
1. In a dual bobbin assembly for a dual coil motor, a pair of bobbins arranged in co-axial relation, each bobbin having a core to be wound with a wire and a pair of end flanges attached to the core for retaining the winding, a flange of each bobbin being provided with a retainer for immobilizing the lead wires connected to the ends of the related coil winding, each retainer being the complement of the other and comprising: a radially projecting tab having one axially projecting end finger, and an odd number of additional axially projecting fingers arranged in spaced relation as a set to afford pockets for said lead wires, each of the additional fingers having a sloped wall with the fingers on the tabs of the two bobbin flanges in opposed interfitting relation so that the sloped walls of one set of additional fingers wedge on the sloped side walls of the other set of additional fingers, thereby to crimp and retain the lead wires disposed in the pockets.

3,843,947

SEQUENCING CONTROL MODULE

Harold A. McIntosh, South Pasadena, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 5, 1973, Ser. No. 338,368
Int. Cl. H01h *71/18*
U.S. Cl. 337—126 **6 Claims**



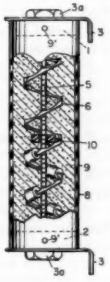
1. A sequencing control module comprising:
a housing;
first and second controlled device sets spaced apart a selected distance on said housing, said first controlled device set including first and second contacts mounted from said housing, said second contact being mounted for movement into engagement with said first contact;
a driven element carried from said housing and shiftable to a first position to actuate said first controlled device set and to a second position to actuate said second controlled device set;
electrical drive means mounted on said housing, coupled with said driven element, and including first and second circuit means and further including a lever arm shiftable in one direction to shift said driven element to said one position and a switch control arm projecting therefrom and means coupling said switch control arm with said second contact;
first and second position control elements mounted on said housing for selectively opening said first and second circuit means;
control element actuating means coupled with said drive means and operative upon shifting of said driven element to said first position to engage said first control element to open said first circuit means and upon shifting of said driven element to said second position to engage said second control element and open said second circuit means; and
control means for selectively completing said first and second circuit and including coupling means loosely coupling said driven element with said lever arm to provide a sufficient amount of play between said lever arm and element when said element is in said first position to enable said control element actuating means to engage said first control element to open said first circuit means while said driven element remains in said first position.

3,843,948

HIGH-VOLTAGE FUSE

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Sept. 12, 1973, Ser. No. 396,579
Int. Cl. H01h *85/04*
U.S. Cl. 337—158 **6 Claims**

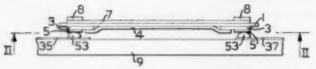


1. A high-voltage fuse including
a a tubular casing of electric insulating material;
b a pair of terminal plugs closing the ends of said casing;
c a pulverulent arc-quenching filler inside said casing;
d helically wound fusible element means conductively interconnecting said pair of terminal plugs and submersed in said filler, the turns of said fusible element means being arranged in the lateral surfaces of a prism having a predetermined number of edges; and
e insulating strip means supported on the ends thereof by said pair of terminal plugs and supporting each of the turns of said fusible element at a number of points smaller than said predetermined number.

3,843,949
ELECTRICAL RELAY

Charles T. Plough, 238 Britar St., Beaconsfield, Quebec; Marcus Arts, 2661 McGill, Longueluil, Quebec; Michael Leitner, 14 Gazelle, Dollard Des Ormeaux, Quebec; William Russel, 247 Ballantyne Ave., Montreal, Quebec; Frank Marsman, 68 Brecterdec Ave., Dollard Des Ormeaux, Quebec, and Keith Eastwood, 138 Beacon Hill Rd., Beaconsfield, Quebec, all of Canada

Filed Sept. 29, 1972, Ser. No. 293,323
Claims priority, application Canada, Oct. 1, 1971, 124190
Int. Cl. H01c 7/04
U.S. Cl. 338—23 **10 Claims**

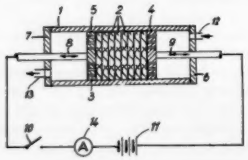


1. An electrical relay capable of providing a substantially complete high voltage isolation between its control element and its temperature sensitive switching element comprising:
   a. a plate-like heat conductive supporting substrate made of electrically insulating material having a high dielectric strength and good thermal conductivity, the thickness of said substrate being approximately 0.006 inch;
   b. first spaced electrical contacts on one face of said substrate;
   c. a layer of selected temperature sensitive material bridging said first spaced electrical contacts;
   d. an electrical heater device provided on the opposite side of the substrate to heat said temperature sensitive material and acting as said control element; and
   e. second spaced electrical contacts mounted on said electrical heater device;
   f. said temperature sensitive material satisfying the following criteria:
      i. contains elements whose atoms when in chemical combination with other elements have an incompletely filled *d*-shell or an incompletely filled *f*-shell;
      ii. contains a substance effective to remove *s*- and *p*-electrons from the conduction bands of said atoms; and iii. exhibits a sharp change in conductivity between an insulating condition and a conducting condition at a definite critical temperature.

3,843,950
POROUS ELECTRIC HEATING ELEMENT

Hermann J. Schladitz, Munich, Germany, assignor to Schladitz-Whiskers A.G.

Filed July 3, 1972, Ser. No. 268,672
Claims priority, application Germany, July 7, 1971, 2133932
Int. Cl. H01c 3/00
U.S. Cl. 338—208 **4 Claims**

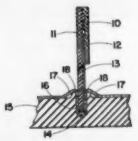


1. An electric heating element comprising an electrically conductive porous body the pores of which forming passages for a fluid to be heated, said porous body consisting of a plurality of layers of a fabric made of fibers selected from the group consisting of glass, quartz and carbon fibers, said layers being arranged regularly one upon each other and being connected to each other in an electrically conductive manner by a metal deposition produced by decomposition of a thermally decomposable metal compound, said metal deposition forming at the same time a metal coating on the fibers of the fabric forming said layers, and electrodes in contact with spaced apart portions of the skeleton formed by said interconnected layers.

3,843,951
CONNECTION OF AN ELECTRICAL COMPONENT TO A FLEXIBLE CIRCUIT

Peter Francis Maheux, Kanata, Ontario, Canada, assignor to Bell Northern Research Ltd., Ontario, Canada

Filed Jan. 26, 1973, Ser. No. 327,210
Int. Cl. H05k 1/04
U.S. Cl. 339—17 F **1 Claim**



1. A method of connecting an electrical component to a flexible circuit in a housing, comprising:
   forming a recess in said housing, said recess forming a receptive formation adapted to receive and cooperate with a shape on the component;
   forming a rib formation on at least part of the periphery of the recess;
   positioning a flexible circuit between said housing and said component;
   pressing the component and the housing together to push said shape on the component into physical engagement with the formation on the housing, said rib formation distorting on insertion of the component, the flexible circuit held between the shape and the formation and in electrical contact with the component, the component held in position relative to the housing by the distortion of the rib formation.

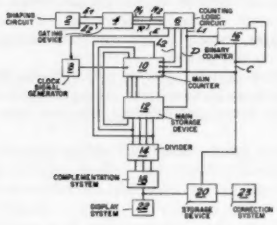
3,843,952
METHOD AND DEVICE FOR MEASURING THE RELATIVE DISPLACEMENT BETWEEN BINARY SIGNALS CORRESPONDING TO INFORMATION RECORDED ON THE DIFFERENT TRACKS OF A KINEMATIC MAGNETIC STORAGE DEVICE

Bernard Husson, Issy-les-Moulineaux, France, assignor to Entreprise de Recherches et d'Activites Petrolieres (ELF), Paris, France

Filed Feb. 23, 1973, Ser. No. 335,302
Claims priority, application France, Feb. 24, 1972, 72.6300
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 **6 Claims**

1. A method for measuring and adjusting the relative displacement between binary signals corresponding to information recorded on the different tracks of a kinematic magnetic storage device, wherein use is made of a reference track and the relative displaycement between the binary signals contained in said track and those contained in each of the other tracks is measured by carrying out the following operations on each set of two tracks:
   - shaping said binary signals,

- producing a signal A which represents both in magnitude and in sign the relative displacement in time between the two signals,
- producing a signal N which is generated only if the two signals which have previously been shaped coexist correspond to pulses having at least a partial and common existance in time,
- measuring and storing the time-duration of the signal A,
- totalizing said time-duration corresponding to each of only



those measurements for which a signal N was generated,
- dividing the total time-duration by the number of measurements in which the signal N is present,
- storing the quotient resulting from said dividing, said quotient representing the mean relative displacement between the recordings on the two tracks under comparison,
- correcting for the mean relative displacement which is thus measured.

3,843,953

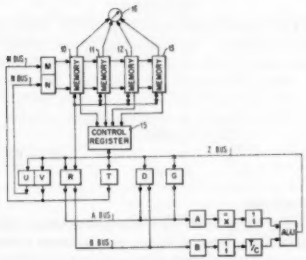
APPARATUS FOR CONTROLLING FUNCTIONALLY SEVERABLE PARTS OF A COMPUTER SYSTEM

Gerald A. Maley, Fishkill, and Jacob Riseman, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 267,351, June 29, 1972. This application Nov. 19, 1973, Ser. No. 416,909

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **6 Claims**



1. In a computer system, including an arithmetic logic unit and having a partitioned memory, and further including a supervisor program for determining the number of memory partitions to be used for a given task, apparatus for activating selected memory partitions of said system, said apparatus operable during the supervisor state of said system, said apparatus comprising a control register for activating at least one of said memory partitions said control register being responsive to a signal from the ALU representing a determination by said supervisor program of said number of memory partitions to be used to accomplish said task to change the contents of said register and thereby activate said at least one memory partition, and means for measuring the total time memory partition is used to accomplish said task.

3,843,954

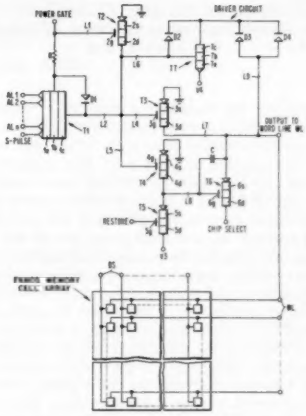
HIGH-VOLTAGE INTEGRATED DRIVER CIRCUIT AND MEMORY EMBODYING SAME

Aage Ansgar Hansen, and Ralph David Lane, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,966

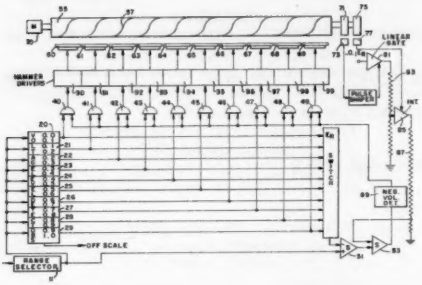
Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **20 Claims**



1. A high voltage integrated driver circuit comprising:
a transistor having a first conductive electrode, a second conductive electrode, and a control electrode,
an output connected to said first conductive electrode,
means for applying a signal pulse of a predetermined polarity to said second conductive electrode, and
selectably operable means conditioned either to a first state for clamping the voltage of said control electrode to cut off said transistor and thereby to maintain said first conductive electrode and said output at a first predetermined voltage level, or to a second state for unclamping the voltage of said control electrode to permit the voltage of said first conductive electrode to swing in the direction of said predetermined polarity in response to said signal pulse,
said selectably operable means comprising a second transistor having a third conductive electrode, a fourth conductive electrode, and a second control electrode,
a fixed potential source,
means connecting said third conductive electrode to said fixed potential source so as to maintain said third conductive electrode at said fixed potential,
means connecting said fourth conductive electrode to said first-recited control electrode so as to maintain said fourth conductive electrode and said first-recited control electrode at the same potential, and
means for selectably applying a signal to said second control electrode to render said second transistor either conductive or non-conductive.

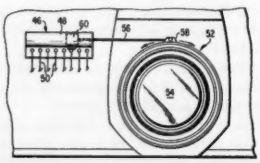
3,843,955
HELICAL BAR STRIP CHART RECORDER
Charles B. Pear, Jr., Greenlawn, N.Y., assignor to Potter Instrument Company Inc., Plainview, N.Y.
Filed Oct. 19, 1972, Ser. No. 298,834
Int. Cl. G01d *9/00*
U.S. Cl. 346—35 **12 Claims**



1. A recorder for recording a graph of a variable value comprising a plurality of adjacent dot printing means arranged in a row each operable to print a dot in any selected one of adjacent dot positions along a print line extending in the direction of said row, each dot printing means comprising a single dot marker having at least a portion movable to each of the dot positions corresponding to such dot printing means and being operable to print a dot at any one of said dot positions along said print line by movement of said portion to the selected dot position and actuation of such dot marker to print a dot at the selected dot position, means to establish a plurality of consecutive analog ranges into which variable value may fall, each of said ranges corresponding to a different one of said dot printing means, and control means to select the dot printing means corresponding to the range in which said variable value falls and to actuate the dot marker of the selected dot printing means to print a dot in position along the print line thereof selected in accordance with where said variable value falls in the range corresponding to the selected dot print means.

ERRATUM
For Class 354—3 see:
Patent No. 3,842,587

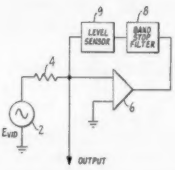
3,843,956
DATA RECORDING SYSTEM FOR PHOTOGRAPHIC CAMERAS
John J. Kauneckas, 2301 E. St. N.W., Washington, D.C. 20037
Filed Sept. 25, 1973, Ser. No. 400,695
Int. Cl. G03b *17/24*
U.S. Cl. 354—108 **13 Claims**



1. A system for automatically recording images representative of camera settings on film comprising:
first multiple position selector switch means adapted to be coupled to an aperture setting mechanism of said camera for identifying selected aperture settings thereof;
first display means including a first plurality of light emitting electroluminescent devices adapted to record coded images on said film, said electroluminescent devices selectively energizable to form a plurality of said coded images, each corresponding to a predetermined setting of said first selector switch;
a first plurality of electrical conductors coupling said electroluminescent devices in first display means and first selector switch means for permitting selection of said coded images whereby camera aperture settings may be indicated on said film;
second multiple position selector switch means adapted to be coupled to an exposure time setting mechanism of said camera for identifying selected exposure time settings thereof;
second display means including a second plurality of light emitting electroluminescent devices adapted to record coded images on said film, said electroluminescent devices selectively energizable to form a plurality of said coded images, each corresponding to a predetermined setting of said second selector switch; and,
a second plurality of electrical conductors coupling said electroluminescent devices in second display means and said second selector switch means for permitting selection of said coded images whereby camera exposure time settings may be indicated on said film.

ERRATUM
For Class 357—67 see:
Patent No. 3,843,911

3,843,957
VIDEO PROCESSING CIRCUIT
Nikola Vidovic, Santa Clara, Calif., assignor to International Video Corporation, Sunnyvale, Calif.
Filed Apr. 30, 1973, Ser. No. 355,758
Int. Cl. H04n *9/02*
U.S. Cl. 358—21 **3 Claims**

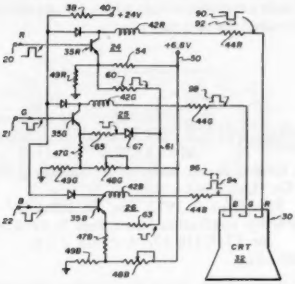


1. Apparatus for processing a composite color video signal to attenuate the non-chrominance components excursions of the signal which are negative with respect to a selected blanking level comprising
amplifier means having inverting and non-inverting inputs and an output,
means for applying said composite color video signal to said inverting input,
means for connecting said non-inverting input to a selected blanking level voltage,
negative feedback means connected between said amplifier output and said inverting input for providing an open feedback path for video signal portions above said selected blanking level and a closed feedback path for video signal portions below said selected blanking level, and
means for taking the processed output signal at said inverting amplifier input.

3,843,958
HUE CORRECTION FOR A CHROMA CHANNEL

John H. Furrey, Schaumburg, Ill., assignor to Warwick Electronics, Inc., Chicago, Ill.

Filed Mar. 26, 1973, Ser. No. 344,545
Int. Cl. H04n 9/48
U.S. Cl. 358—40 8 Claims



1. In a color television receiver having an image reproduction device and a chroma channel which develops three color signals, the improvement comprising:

three color stages corresponding to a red output stage, a green output stage, and a blue output stage for coupling the three color signals to the image reproduction device, switchable feedback means coupled to the green output stage for selectively altering the green output signal therefrom, including

gain control means for altering the gain of said green output stage, and

a switchable device responsive to a predetermined combination of color signals which indicate a green hue is to be reproduced for enabling the gain control means.

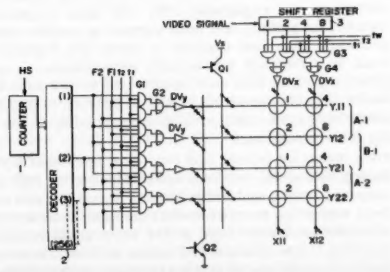
ERRATUM

For Class 358—45 see:
Patent No. 3,843,836

3,843,959
MATRIX TYPE DISPLAY DRIVING SYSTEM

Kenichi Owaki; Norihiko Nakayama; Toshinori Urade, all of Kobe, and Hiroshi Furuta, Akashi, all of Japan, assignors to Fujitsu Limited, Nakahara-ku, Kawasaki, Japan

Filed June 21, 1973, Ser. No. 372,044
Claims priority, application Japan, June 22, 1972, 47-62766
Int. Cl. H04n 9/30
U.S. Cl. 358—59 16 Claims



1. A display system comprising:

a. display device including a plurality of first and second radiation elements for emitting first and second kinds of radiation respectively, said plurality of radiation elements disposed in a matrix of rows and columns so that said first radiation elements are separated from each other along said columns and rows;

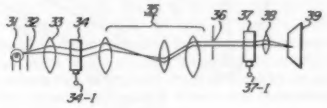
b. energizing means for providing energizing signals to be applied to said radiation elements; and

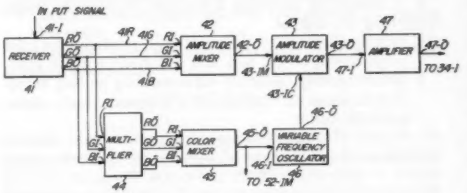
c. control means for applying first the energizing signals to a first field of picture elements, each comprising at least one first radiation element and one second radiation element, and thereafter applying the energizing signals to a second field of different picture elements, each comprised of said one second radiation element and another first radiation element.

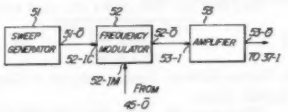
3,843,960
COLOR INFORMATION REPRODUCING SYSTEM

Yasunori Kanazawa, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 27, 1972, Ser. No. 248,017
Claims priority, application Japan, Apr. 30, 1971, 44-27977
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 R 3 Claims







1. A color information reproducing system comprising a light source radiating light including all the wavelength components lying within the visible spectrum range, a first optical means for turning the light emanating from said light source into a light beam collimated to the optical axis, means for producing a color information signal, means for detecting a chrominance signal from said color information signal, means for detecting a brightness signal from said color information signal, means for selectively separating and modulating light disposed in such a position that said collimated light beam is incident thereupon at a predetermined angle of incidence so as to selectively separate solely a light portion having a specific wavelength component from said collimated light beam depending on said chrominance signal and to subject this selectively separated light portion to brightness modulation depending on said brightness signal, a second optical means for detecting the optical signal appearing from said selective separating and modulating means after having been diffracted at a predetermined diffraction angle, scanning means disposed

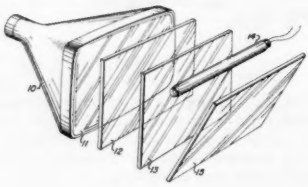
in such a position that said optical signal appearing from said second optical means is incident thereupon at a predetermined angle of incidence so as to carry out scanning of said optical signal, and display means for displaying said scanned optical signal, in which said scanning means comprises an ultrasonic oscillator, an ultrasonic medium arranged for receiving an ultrasonic wave from said ultrasonic oscillator, and signal generating means for generating a sweep signal which is frequency-modulated by said chrominance signal, said optical signal being applied to said ultrasonic medium at a predetermined angle of incidence and said sweep signal being applied to said ultrasonic oscillator for energizing same.

3,843,961

METHOD FOR PROVIDING A LUMINOUS MULTI-COLOR IMAGE

Stuart G. Mirell, Tempe, Ariz., assignor to Spectradyne, Tempe, Ariz.

Filed Oct. 11, 1973, Ser. No. 405,562
Int. Cl. H04n *9/12*
U.S. Cl. 358—81 **7 Claims**



1. A method of providing a luminous multi-color image, comprising the steps of:

a. forming a luminous variative-intensity monochrome color image having bright, dark and intermediate areas; and

b. simultaneously uniformly superimposing on said monochrome image an illumination of a second visually distinguishable color;

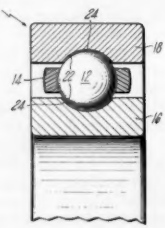
the intensity of said superimposed illumination being adjusted such that the bright areas of said variative-intensity image appear in said monochrome color, the dark areas thereof appear in said second color and the intermediate areas thereof appear in colors which are a mixture of said monochrome color and said second color.

3,843,962

BEARING

Irving R. Bogue, Hebron, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Aug. 20, 1973, Ser. No. 390,129
Int. Cl. F16c *33/60, 33/00*
U.S. Cl. 308—187 **10 Claims**



1. A bearing assembly including:

an inner race element having a raceway therein;

an outer race element having a raceway therein;

a coating of metal on the raceway of each of said inner and outer race elements, said coating being of a material softer than the material of said raceways;

a plurality of bearing elements between said race elements, said bearing elements being of a material insoluble with said metal coated on said races; and

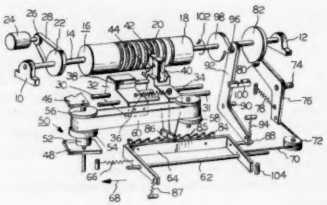
retainer means for retaining said bearing elements, said retainer means being composed of a polymeric material filled with a metallic sulfide which has an affinity for said metal coated on said races.

3,843,963

ANNOUNCING DEVICE FOR USE WITH A MEASURING APPARATUS

Isao Kozu, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 6, 1972, Ser. No. 286,668
Claims priority, application Japan, Sept. 9, 1971, 46-70198
Int. Cl. G11b *27/14, 21/08, 21/34*
U.S. Cl. 360—12 **4 Claims**



1. An announcing device for use with a measuring apparatus which generates an analog signal, said announcing device comprising:

a recording medium having thereon a plurality of sound tracks, each of said sound tracks storing a voice signal corresponding to an amount which can be determined by said measuring apparatus;

a transducer head for scanning said sound tracks;

a head supporting member for supporting said transducer head;

a movable carriage connected resiliently to said head supporting member so that said head supporting member is movable as a single unit with said carriage;

driving means for driving said carriage to move said transducer head, in a direction substantially perpendicular to said sound tracks, in an amount in proportion to the analog amount determined by said measuring apparatus; shifting means engageable with said head supporting member for shifting said head supporting member independently from said carriage to move said transducer head, in a direction substantially perpendicular to said sound tracks, at least an amount equal to one pitch between adjacent sound tracks and to position said transducer head at an exact position corresponding to one of the sound tracks; and

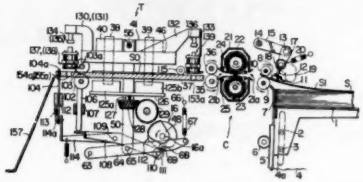
moving means for moving said recording medium at a predetermined speed, whereby upon initiation of said announcing device, said shifting means is engaged with said head supporting member to shift the same so as to position said transducer head at the exact position corresponding to one of said sound tracks, and said transducer head scans said one of said sound tracks with the movement of said recording medium so as to reproduce the voice signal recorded thereon corresponding to the amount measured.

3,843,964

MAGNETIC TRANSFER RECORDING APPARATUS

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 318,710
Claims priority, application Japan, Dec. 27, 1971, 46-2812; July 24, 1972, 47-87028
Int. Cl. G11b 5/86, 5/58
U.S. Cl. 360—17 16 Claims



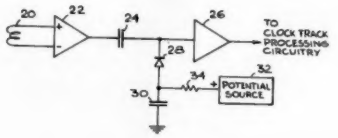
1. A magnetic transfer recording apparatus comprising a magnetic transfer recording section including means for magnetically transfer recording onto a magnetized blank sheet information which is magnetically recorded on a master sheet, magnetized blank sheet storage section including means for successively moving individual magnetized blank sheets from the storage section to the magnetic transfer recording section, and a cleaning section interposed in the path of the magnetized blank sheets moved from the storage section to the recording section and including at least one pair of brush rollers disposed opposite each other and flanking the path of the moved magnetized blank sheets for cleaning opposite sides of the sheets before the sheets reach the magnetic transfer recording section, and guide means for centering the sheet between the brush rollers, said guide means disposed at least partially intermediate the brush rollers.

3,843,965

MAGNETICALLY RECORDED CLOCK READING CIRCUIT

James K. Berger, Sherman Oaks, Calif., assignor to Computer Design Corporation, Los Angeles, Calif.

Filed May 24, 1973, Ser. No. 363,358
Int. Cl. G11b 5/44
U.S. Cl. 360—51 5 Claims



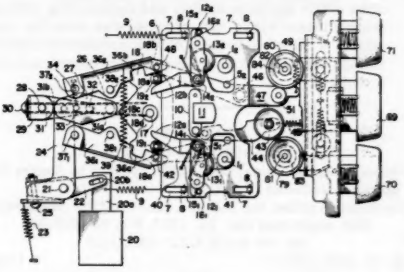
1. In a circuit for reading data which has been recorded on a magnetic medium, wherein the magnetic reading head applies its output to an amplifier, means for compensating for distortion which occurs at the commence of said reading comprising:
   a first capacitor connected between said reading head and the input to said amplifier,
   a source of reference potential,
   a second capacitor having one terminal connected to said source of reference potential, and
   diode means connecting the other terminal of said second capacitor to the input to said amplifier, said diode means being poled to conduct in response to the leading edge of the first signal read by said reading head.

3,843,966

MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

Yukio Munakata, Tokyo, Japan, assignor to Pioneer Electronics Corporation, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,577
Claims priority, application Japan, June 27, 1970, 45-56265
Int. Cl. G11b 15/32
U.S. Cl. 360—74 9 Claims



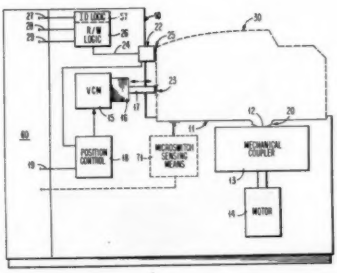
1. In a magnetic tape recording and reproducing apparatus having a cam plate which controls the direction in which the tape is fed, which cam plate is in turn controlled by an electromagnetically actuated plunger, a circuit for controlling the actuation of said plunger comprising:
   means for activating the apparatus,
   means for detecting the end of the tape, and
   means for switching the tape feeding direction including a rotary switch engaged with said cam plate and rotatable therewith,
   said plunger being actuated in response to the energization of any of said means.

3,843,967

STORAGE SYSTEM HAVING A UNIVERSAL DISK DRIVE AND A FAMILY OF DATA MODULES

Richard Burke Mulvany, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1973, Ser. No. 336,116
Int. Cl. G11b 5/82
U.S. Cl. 360—98 5 Claims



1. A random access storage system employing a family of data modules, said family being comprised of a plurality of different classes of data modules where each class is defined by the number of magnetic disks within the data modules associated with that class, all data modules within any class

being interchangeable with data modules of the same class and with each and every data module of all other classes of said family, comprising in combination:

a universal disk drive for connecting to all data modules within said family of data modules, said universal disk drive having a sensing means;

and a data module of said family of data modules connected to said universal disk drive to effectively form said random access storage system, said data module including means for indicating the number of magnetic storage disks within said data module and for coacting with said sensing means within said universal disk drive for transmitting a signal indicative of the number of magnetic storage disks within said data module to said universal disk drive.

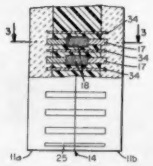
3,843,968

MAGNETIC HEAD

William L. Kroon, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 156,801, June 25, 1971, abandoned.
This application Oct. 24, 1973, Ser. No. 409,045
Int. Cl. G11b *5/22, 5/28, 5/20*
U.S. Cl. 360—121 **6 Claims**

1. A multichannel magnetic head assembly comprising a head face part of nonglassy refractory ceramic material, having a hardness comparable to that of ferrite materials, said face part having a plurality of spaced parallel slots, a plurality of separate ferrite pole pieces mounted and glass bonded in said slots, said face part being formed of two identical half portions, a layer of nonmagnetic material deposited on one corresponding side of each said identical half portion, said half portions being assembled with said corresponding sides in abutting relation along a gap line provided by said layer of

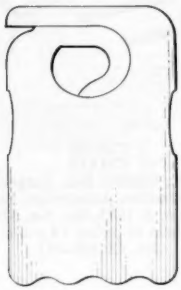


non-magnetic material separating said face part portions and associated pole pieces, a core housing having a surface receiving said face part in mated secured engagement, and a plurality of magnetic core members having coil means mounted in said core housing to register with and engage portions of said pole pieces thereby forming a plurality of magnetic transducers.

DESIGNS

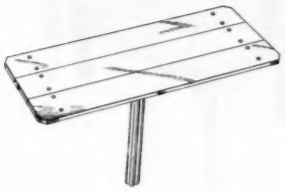
OCTOBER 22, 1974

233,275
DISPOSABLE BIB OR SIMILAR ARTICLE
Edward J. Goldman, Randolph, Mass., assignor to Technology Associates, Inc., Dedham, Mass.
Filed July 27, 1972, Ser. No. 275,475
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—226

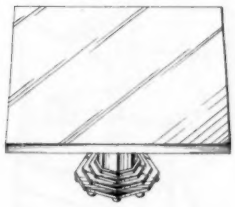


233,276
NECKTIE
Andy J. Wells, Rte. 1, Box 414C, Bemidji, Minn. 56601
Filed Oct. 4, 1972, Ser. No. 294,976
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—351

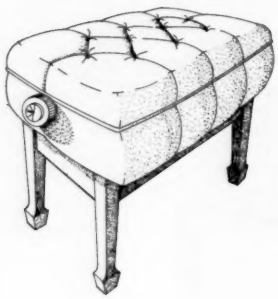
233,277
PICNIC TABLE
Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co. Inc., North Aurora, Ill.
Filed Mar. 12, 1973, Ser. No. 340,203
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



233,278
CONVERTIBLE DINING AND GAME TABLE
Marvin O. Wilbourn, 2725 Meadowbrook Drive, Boise, Idaho 83705
Filed July 20, 1972, Ser. No. 273,568
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27

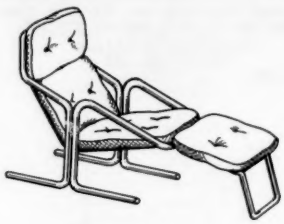


233,279
ADJUSTABLE ORGAN BENCH
Hubert S. Shearin and Charles Riley, Cincinnati, Ohio, assignors to Manual Arts Furniture Company, Cincinnati, Ohio
Filed Feb. 28, 1973, Ser. No. 336,434
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32

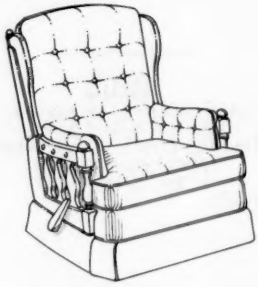


233,280
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Jan. 2, 1973, Ser. No. 320,245
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39

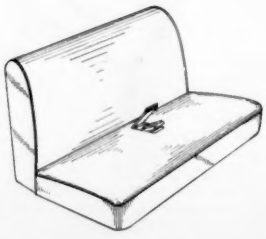
233,281
LOUNGE CHAIR
Jerry Johnson, Rancho Cuerdo, Box 50, Portrero, Calif. 92063
Filed May 10, 1973, Ser. No. 359,006
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39



233,282
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Jan. 3, 1973, Ser. No. 320,799
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39

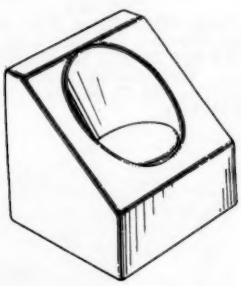


233,283
COMBINED AUTOMOBILE SEAT AND RECESSED SEAT BELT BUCKLE
Donald G. Radke, Rochester, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Nov. 22, 1972, Ser. No. 308,922
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



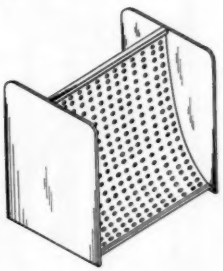
233,284
SEAT
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed May 16, 1973, Ser. No. 360,889
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

233,285
CHAIR
Christopher B. S. Gill and Jacqueline M. Gill, both of Yew Tree Cottage, Station Road, Chippenham, England
Filed Oct. 18, 1972, Ser. No. 298,788
Claims priority, application Great Britain May 24, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



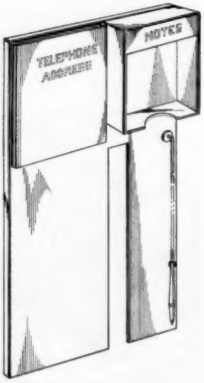
233,286
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed Apr. 16, 1973, Ser. No. 351,500
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

233,287
MERCHANDISE DISPLAY STAND
Gary W. H. Smith, Rte. 3, Box 50, Columbus, Wis. 53925
Filed Feb. 1, 1973, Ser. No. 328,667
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85

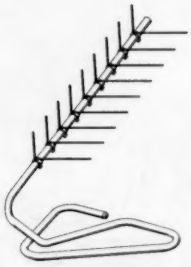


233,288
DISPLAY RACK
Tom Bluemel, Arcadia, Calif., assignor to Century Displays, a division of Century Papers, Inc.
Filed Feb. 20, 1973, Ser. No. 333,775
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85

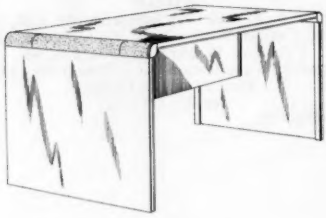
233,289
REMOVABLE MESSAGE CENTER UNIT FOR A WALL MOUNTED TELEPHONE
Anthony P. Barone, 1540 Hubbard Road, North Madison, Ohio 44057
Filed Mar. 13, 1972, Ser. No. 234,462
Term of patent 14 years
Int. Cl. D6—*06*
U.S Cl. D6—130



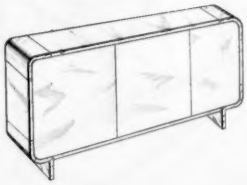
233,290
MERCHANDISE DISPLAY STAND
Gary W. H. Smith, Rte. 3, Box 50, Columbus, Wis. 53925
Filed Aug. 30, 1973, Ser. No. 392,866
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—145



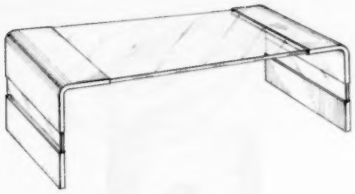
233,291
DESK
Georges Frydman, 36 Avenue Edith Cavell, Nice (06), France
Filed Jan. 20, 1972, Ser. No. 219,603
Claims priority, application France Dec. 16, 1971
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



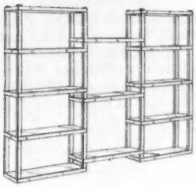
233,292
CABINET
Irving M. Rosen, White Plains, N.Y., assignor to The Pace Collection, Inc., New York, N.Y.
Filed Sept. 25, 1972, Ser. No. 291,970
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



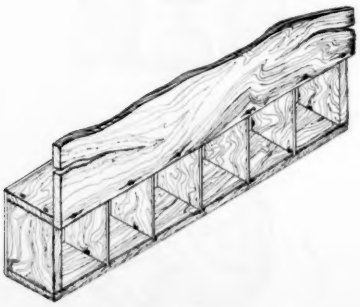
233,293
TABLE
Irving M. Rosen, White Plains, N.Y., assignor to The Pace Collection, Inc., New York, N.Y.
Filed Sept. 7, 1972, Ser. No. 286,867
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



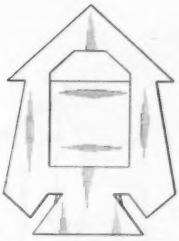
233,294
ETAGERE
George V. Goulder, Shaker Heights, Ohio, assignor to International Products and Services, Inc., Cleveland, Ohio
Filed Apr. 9, 1973, Ser. No. 348,986
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



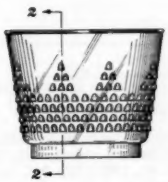
233,295
CANDLE DISPLAY BOX
Christopher Carruthers Sandidge, Los Angeles, Calif., assignor to Sue Sherwood, Simi, Calif.
Filed July 17, 1972, Ser. No. 272,490
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—189



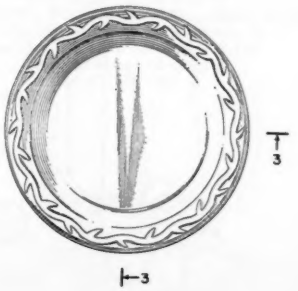
233,296
PICTURE FRAME
Edward Olczewski, 1650 7th Ave. N., St. Petersburg, Fla. 33713
Filed June 19, 1972, Ser. No. 251,861
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—236



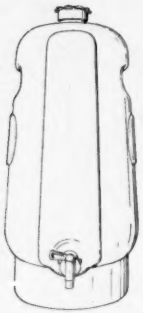
233,297
DRINKING GLASS
Robert S. Raymer, 14 Adams Road, Marblehead, Mass. 01945
Filed Apr. 7, 1972, Ser. No. 242,270
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—6



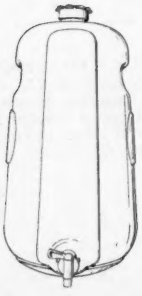
233,298
DINNER PLATE OR SIMILAR ARTICLE
George A. Cheladze, 666 E. Ocean Blvd., Suite 1101, Long Beach, Calif. 90802
Original design application May 4, 1970, Ser. No. 22,804. Divided and this application June 8, 1971, Ser. No. 151,119
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36



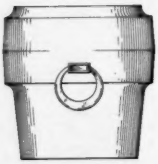
233,299
BREW KEG WITH BASE
William Henry Treby Tayleur, 28 Southwood Lawn Road, Highgate Village, London, N.6, England
Filed Jan. 11, 1973, Ser. No. 322,879
Claims priority, application Great Britain July 14, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—61



233,300
BREW KEG
William Henry Treby Tayleur, 28 Southwood Lawn Road, Highgate Village, London, N.6, England
Filed Jan. 11, 1973, Ser. No. 322,880
Claims priority, application Great Britain July 14, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—61

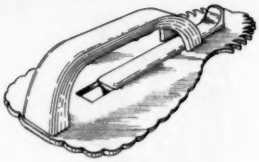


233,301
MULTI-PURPOSE BIN
Manus Mudde, Berkel-Enschot, Netherlands, assignor to Dart Industries, Inc., West Bend, Wis.
Filed Jan. 22, 1973, Ser. No. 325,915
Claims priority, application Switzerland Aug. 4, 1972
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—76

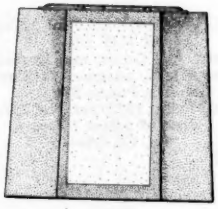


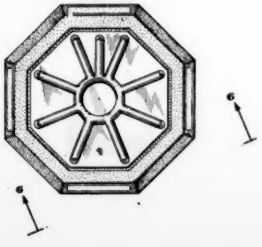
233,302
SANDWICH TOAST PRESS
Evelyn F. Trovinger, 1425 Lake St., Lodi, Calif. 95240
Filed Apr. 17, 1973, Ser. No. 351,856
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—99

233,303
COMBINED PINEAPPLE PEELER AND CORER
Raymond George Ashdown, 32 Nundah St., Kedron, Brisbane, Queensland, Australia 4031
Filed Oct. 16, 1972, Ser. No. 297,647
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—147

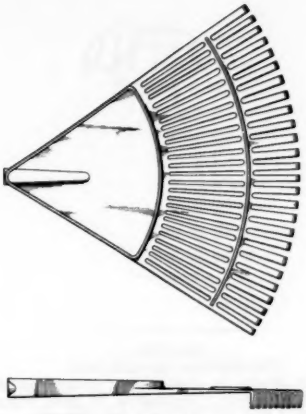


233,304
LITTER RECEPTACLE
Leonard M. Yordon, Daytona Beach, Fla., assignor to Repadco Incorporated, Daytona Beach, Fla.
Continuation-in-part of design application Ser. No. 277,598, Aug. 3, 1972, now Patent No. 231,072.
This application May 18, 1973, Ser. No. 361,647
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

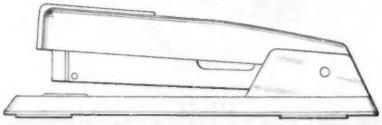




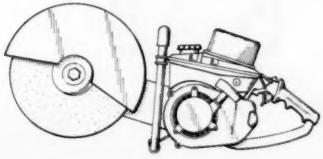
233,305
RAKE HEAD
Harold O. Eads, Parkersburg, W. Va., assignor to McDonough Co., Parkersburg, W. Va.
Filed May 23, 1972, Ser. No. 256,213
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



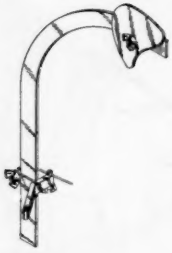
233,306
STAPLING MACHINE OR SIMILAR ARTICLE
John J. Power, Westbury, N.Y., assignor to Swingline Inc., Long Island City, N.Y.
Filed May 7, 1970, Ser. No. 22,881
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D8—50



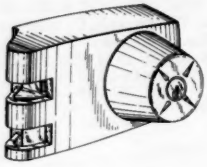
233,307
PORTABLE POWER SAW
Donald Baycura, Binghamton, N.Y., assignor to Stow Manufacturing Company, Binghamton, N.Y.
Filed Dec. 22, 1972, Ser. No. 317,733
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—66



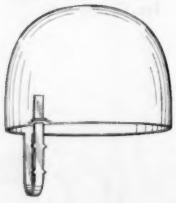
233,308
BOTTLE CUTTER
James E. Hanson, Anoka, Minn., assignor to Hanson Designs, Inc., Anoka, Minn.
Filed Apr. 26, 1973, Ser. No. 354,651
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



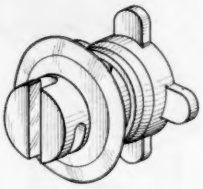
233,309
CROSSBOLT DEADLOCK
Russell W. Waldo, St. Paul, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed Oct. 19, 1973, Ser. No. 407,789
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—132



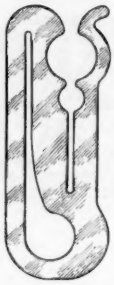
233,310
HOOK BELL FOR A GARMENT BAG CARRIER
James G. Peters, 1 Penrose Lane, Colorado Springs, Colo. 80906
Filed Aug. 16, 1972, Ser. No. 281,179
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—154



233,311
ELECTRICAL FENCE INSULATOR
Robert M. Wilson, Battle Creek, Mich., assignor to Dare Products, Incorporated, Battle Creek, Mich.
Filed Apr. 21, 1972, Ser. No. 246,513
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—230



233,312
COMBINED CLIP AND CLAMP FOR SURGICAL TUBING OR THE LIKE
Leonard W. Lock, Sittingbourne, England, assignor to Abbott Laboratories, North Chicago, Ill.
Filed June 29, 1972, Ser. No. 267,280
Term of patent 14 years
Int. Cl. D8—*07;* D24—*02;* D7—*05*
U.S. Cl. D8—259

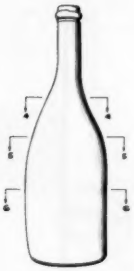


233,313
DISPENSING CONTAINER FOR MEDICAMENTS OR THE LIKE
Lloyd S. Turner, Los Gatos, and Daniel G. Vaughan, Monte Sereno, Calif., assignors to Barnes-Hind Diagnostics, Inc., Carolina, Puerto Rico
Filed Mar. 1, 1973, Ser. No. 337,101
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

233,314
DISPENSING CONTAINER FOR MEDICAMENTS OR THE LIKE
Lloyd S. Turner, Los Gatos, and Daniel G. Vaughan, Monte Sereno, Calif., assignors to Barnes-Hind Diagnostics, Inc., Carolina, Puerto Rico
Filed Mar. 1, 1973, Ser. No. 337,103
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

233,315
DISPENSING CONTAINER FOR MEDICAMENTS OR THE LIKE
Lloyd S. Turner, Los Gatos, and Daniel G. Vaughan, Monte Sereno, Calif., assignors to Barnes-Hind Diagnostics, Inc., Carolina, Puerto Rico
Filed Mar. 1, 1973, Ser. No. 337,102
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

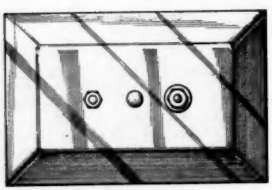
233,316
BOTTLE
Gaston Brunel, Chateauneuf-du-Pape, Vaucluse, France
Filed Feb. 3, 1972, Ser. No. 223,390
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—72



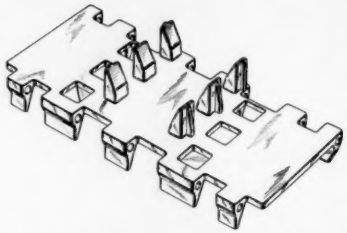
233,317
HANDLE FOR FEEDING-BOTTLE
Pietro Catelli, Como, Italy
(% Novelty-Misitano, A.G., Via Padova 217, Milan, Italy)
Filed Sept. 29, 1971, Ser. No. 184,993
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—176

233,318
BLISTER PACKAGE
Paul E. Moberly, Schoolcraft Township, Kalamazoo County, and Harold E. Rudlaff, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Jan. 22, 1973, Ser. No. 325,863
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192

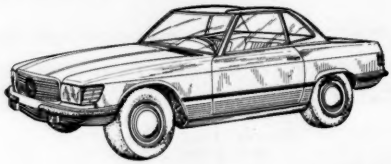
233,319
ELECTRIC INTRUDER ALARM
John S. Skarman, Whittier, Calif., assignor to Malgard Corporation, Monterey Park, Calif.
Filed Apr. 23, 1973, Ser. No. 353,586
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D10—106



233,320
TRACK SHOE FOR AN ENDLESS BELT FOR TRACK-LAYERS
Assar Svensson, Ersmark, Sweden
Filed Oct. 10, 1972, Ser. No. 296,171
Claims priority, application Sweden Apr. 11, 1972
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—60

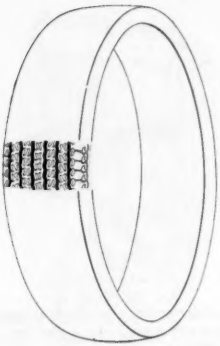


233,321
AUTOMOBILE
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler Benz Aktiengesellschaft, Stuttgart, Germany
Filed Sept. 17, 1971, Ser. No. 181,655
Claims priority, application Germany Mar. 31, 1971
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

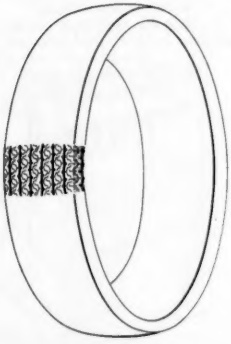


233,322
TRAILER ASSEMBLY
Francis W. Schantz, Melvindale, Mich., assignor to Francis W. Schantz, Melvindale, Mich.
Filed June 7, 1973, Ser. No. 367,794
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—97

233,323
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,478
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142

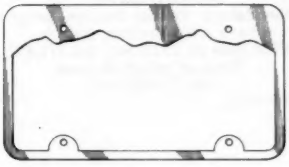


233,324
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Oct. 20, 1972, Ser. No. 299,535
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



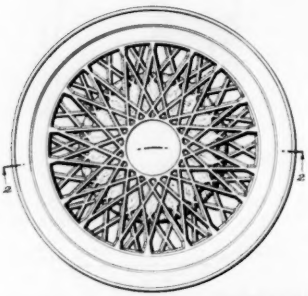
233,325
PNEUMATIC TIRE TREAD AND BUTTRESS
Carl F. Smajd, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 18, 1973, Ser. No. 362,040
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

233,326
AUTOMOBILE LICENSE PLATE FRAME
Robert C. Barber, 8134 Owens Way, Arvada, Colo. 80005
Filed Feb. 23, 1973, Ser. No. 335,082
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—193

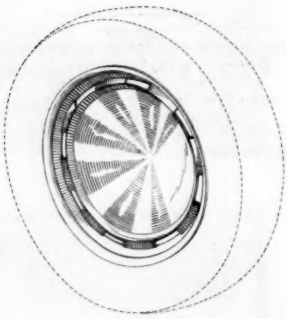


233,327
AUTOMOBILE LICENSE PLATE FRAME
Robert C. Barber, 8134 Owens Way, Arvada, Colo. 80005
Filed Mar. 26, 1973, Ser. No. 345,132
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—193

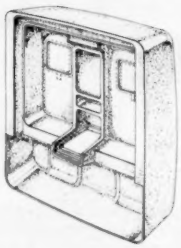
233,328
AUTOMOBILE WHEEL
Henry James Clary, Orange, Calif. (16427 S. Avalon Blvd., Gardena, Calif. 90248), and Delmer D. Scott, Los Angeles, Calif. (5020 Gloria Ave., Encino, Calif. 91316)
Filed Aug. 28, 1973, Ser. No. 392,195
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



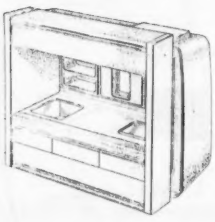
233,329
WHEEL COVER
Sture Lennart Asberg, Partille, Sweden, assignor to SKF Nova AB, Goteborg, Sweden
Filed June 20, 1973, Ser. No. 371,571
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—212



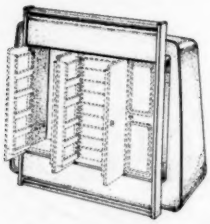
233,330
PREFABRICATED BATHROOM UNIT
Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,807
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



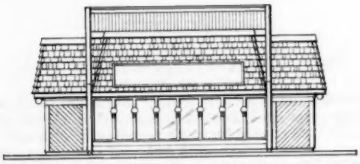
233,331
PREFABRICATED BUILDING UNIT FOR A KITCHEN
Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,809
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



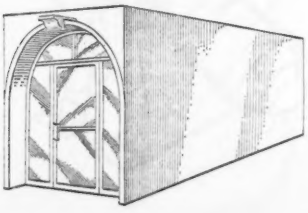
233,332
PREFABRICATED BUILDING UNIT FOR STORAGE
Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,808
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



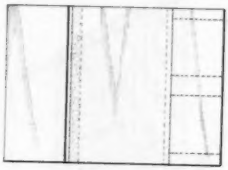
233,333
FOOD SERVICE BUILDING
Samuel M. Mills, Jr., 12810 Cherry Lane, Chesterland, Ohio 44026
Filed Feb. 2, 1973, Ser. No. 328,959
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



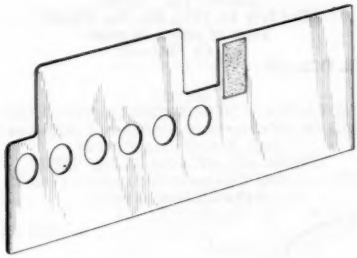
233,334
BUILDING STRUCTURE
Mark A. Wood, 1913 E. 116th St., Carmel, Ind. 46032
Original design application Nov. 12, 1969, Ser. No. 20,041, now Patent No. 221,140. Divided and this application Mar. 15, 1971, Ser. No. 124,636
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 F



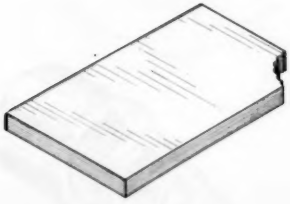
233,335
COMBINED ENVELOPE AND SHEET FOR ADVERTISEMENT
Robert E. Katz, Livingston, N.J., assignor to Webcraft Packaging, Inc., North Brunswick, N.J.
Filed Apr. 13, 1972, Ser. No. 243,903
Term of patent 14 years
Int. Cl. D19—*05*
U.S. Cl. D19—2



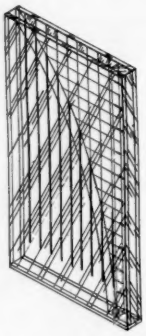
233,336
LABEL FOR BATTERY
Harry M. Channing, Wyomissing, and Bernard J. Elzer, West Reading, Pa., assignors to General Battery Corporation, New York, N.Y.
Filed July 19, 1972, Ser. No. 273,198
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D19—13



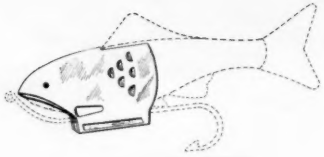
233,337
BOOK DESIGN
Richard A. Kjarsgaard, Reseda, Calif., assignor to Patrick L. Schmidt and David A. Hill, both of Marina Del Rey, Calif.
Filed Aug. 7, 1972, Ser. No. 278,435
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26



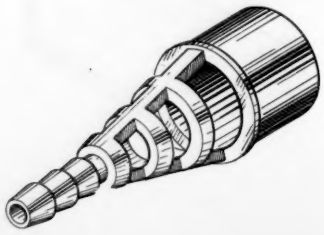
233,338
CHEMICAL DEMONSTRATION APPARATUS
Melvin E. Zandler, 2231 Bullinger, Wichita, Kans. 67204
Filed July 12, 1972, Ser. No. 270,993
Term of patent 7 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



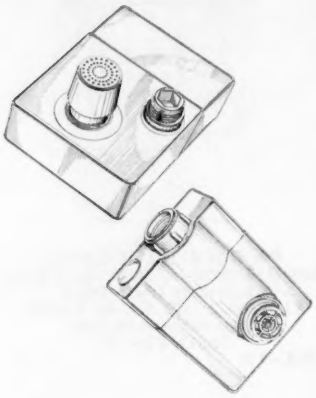
233,339
SHELL FOR LIVE BAIT
Thomas W. Hicks, 3121 Maple Drive NE., Atlanta, Ga. 30305
Filed July 16, 1973, Ser. No. 379,807
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99



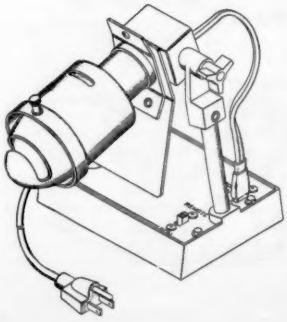
233,340
OXYGEN DILUTER VALVE
Donald F. Diedrich, Temecula, and John H. Price, La Jolla, Calif., assignors to Hudson Oxygen Therapy Sales Company
Filed June 26, 1972, Ser. No. 266,483
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—19



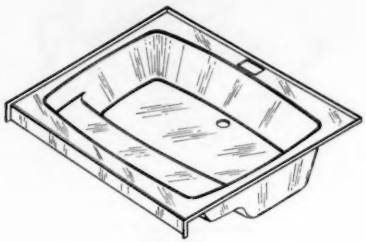
233,341
COMBINED SPOUT AND DIVERTOR VALVE FOR A SHOWER OR THE LIKE
Dennis Charles Arbon, Boughton-on-the-Water, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England
Filed Apr. 24, 1972, Ser. No. 247,254
Claims priority, application Great Britain Oct. 23, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—20



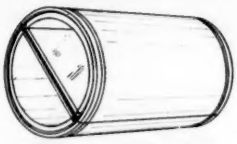
233,342
BENCH MOUNTED COMBINED RADIANT HEATER AND LAMP
Jules A. Court, 888 Green St., Palo Alto, Calif. 94303, and Billy G. Woodward, 363 Conistoga Way, San Jose, Calif. 95123
Filed Oct. 23, 1970, Ser. No. 25,614
Term of patent 14 years
Int. Cl. D23—*03*; D26—*05*
U.S. Cl. D23—75



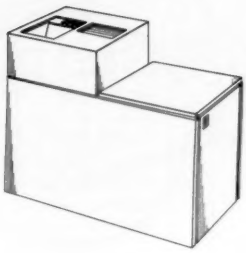
233,343
BATHTUB
Dean Myers, Irvine, Calif., assignor to Tridair Industries, Redondo Beach, Calif.
Filed Apr. 16, 1973, Ser. No. 351,384
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



233,344
DUCT SECTION FOR A VENTILATION TWIN-DUCT
Jorgen Holt, Naestved, Christian Videmark, Haslev, and Palle Hein Christiansen, Naestved, Denmark, assignors to Nordisk Ventilator Co., Aktieselskab, Naestved, Denmark
Filed Dec. 8, 1972, Ser. No. 313,418
Claims priority, application Denmark June 9, 1972
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



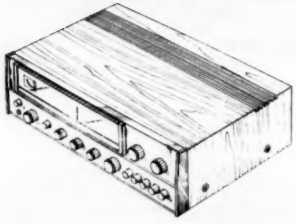
233,345
INPUT-OUTPUT UNIT FOR A DATA PROCESSOR
Collan B. Kneale and Frank Wilkey, Jr., Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 26, 1973, Ser. No. 326,638
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

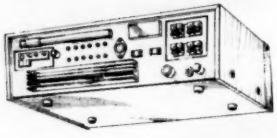


233,346
ELECTRONIC PRINTING CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Torino, Italy
Filed Apr. 10, 1973, Ser. No. 349,883
Claims priority, application Italy Oct. 16, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

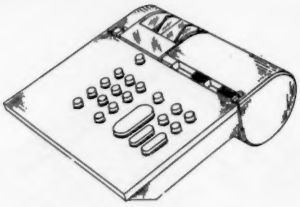
233,347
CALCULATING MACHINE
Myron Beitler, West Orange, and Terry L. Barner, Orange, N.J., assignors to Litton Business Systems, Inc., Orange, N.J.
Filed Aug. 2, 1973, Ser. No. 385,038
Term of patent 14 years
Int. Cl. D14—*02*
US. Cl. D26—5 C

233,348
COMBINED AMPLIFIER AND TUNER THEREFOR
Hitoshi Mukai, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1973, Ser. No. 408,020
Claims priority, application Japan May 29, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L

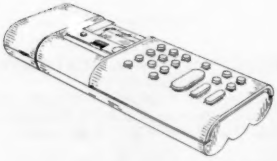




233,349
CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Torino, Italy
Filed June 26, 1973, Ser. No. 373,703
Claims priority, application Italy Dec. 29, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



233,350
PORTABLE CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A, Torino, Italy
Filed June 26, 1973, Ser. No 373,710
Claims priority, application Italy Dec. 29, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

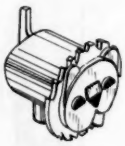


233,351
TABLE COIN TELEPHONE OR SIMILAR ARTICLE
Herbert Kramer, Furstenfeldbruck, and Tonis Kao, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 26, 1973, Ser. No. 400,803
Claims priority, application Germany Mar. 26, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

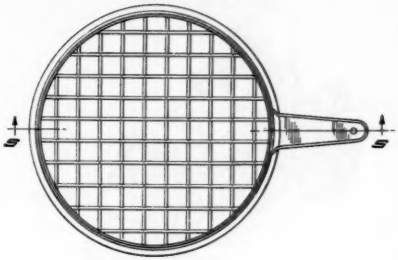
233,352
TABLE COIN TELEPHONE OR SIMILAR ARTICLE
Herbert Kramer, Furstenfeldbruck, and Tonis Kao, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 26, 1973, Ser. No. 400,802
Claims priority, application Germany Mar. 26, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

233,353
TOY FIGURINE OF LIONESS LIKENESS OR THE LIKE
Jerrold J. Krumholz, West Orange, and Herbert Happe Van Reisgen, Westfield, N.J., assignors to Victor Comptometer Corporation, Chicago, Ill.
Filed Jan. 22, 1973, Ser. No. 325,669
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

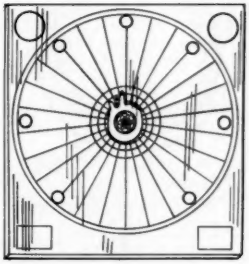
233,354
TOY FIGURINE OF LION LIKENESS OR THE LIKE
Jerrold J. Krumholz, West Orange, and Herbert Happe Van Reisgen, Westfield, N.J., assignors to Victor Comptometer Corporation, Chicago, Ill.
Filed Jan. 22, 1973, Ser. No. 325,670
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



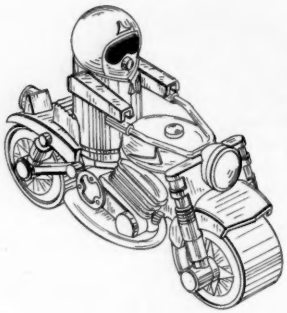
233,355
MOLDED HAND HELD PADDLE FOR BATTING FOAM BALLS
Charles F. Foley, Minnetonka, Minn.
Filed Mar. 21, 1973, Ser No. 343,369
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



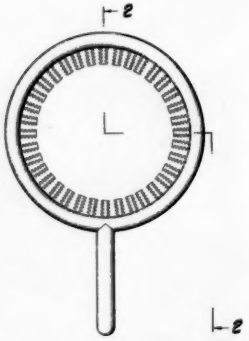
233,356
GAME BOARD
Jacob B. Burke, 6771 Yellowstone Blvd., Forest Hills, N.Y. 11375, and Ziva G. Rosen, 100 W. 57th St., New York, N.Y. 10019
Filed May 30, 1972, Ser. No. 258,239
Term of patent 14 years
Int Cl. D21—*01*
U.S. Cl. D34—5 SS



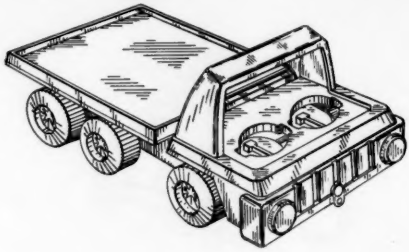
233,357
TOY MOTORCYCLE WITH RIDER OR THE LIKE
Jerrold J. Krumholz, West Orange, and Herbert Happe Van Reisgen, Westfield, N.J., assignors to Victor Comptometer Corporation, Chicago, Ill.
Filed Jan. 22, 1973, Ser. No. 325,668
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



233,358
BUBBLE BLOWING WAND
Fred Kort, Los Angeles, Calif., assignor to Imperial Toy Corporation, Los Angeles, Calif.
Filed Nov. 1, 1973, Ser. No. 412,004
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 H

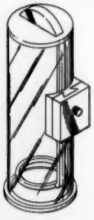


233,359
TOY TRUCK OR THE LIKE
Jerrold J. Krumholz, West Orange, and Herbert Happe Van Reisgen, Westfield, N.J., assignors to Victor Comptometer Corporation, Chicago, Ill.
Filed Jan. 22, 1973, Ser. No. 325,667
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



233,360
CHARM OR SIMILAR ARTICLE
Bernard Bernstein, 3224 Bronx Blvd., New York, N.Y. 10467
Filed Mar. 26, 1973, Ser. No. 345,015
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17

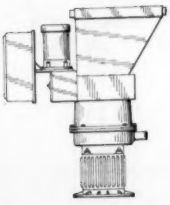
233,361
GOLF BALL WASHER
Francis W. Norden, 103 4th St. NE., and Merlin A. Jacobi, 304 1st Ave. SE., both of Waukon, Iowa 52172
Filed Oct. 4, 1972, Ser. No. 298,754
Term of patent 14 years
Int. Cl. D7—*05*; D15—*05*
U.S. Cl. D49—1 A



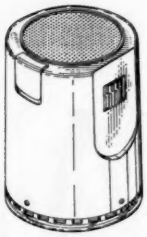
233,362
CROSS PENDANT OR THE LIKE
Robert K. Scott, Jacksonville, Fla., assignor to Abla House, Inc., Jacksonville, Fla.
Filed Nov. 8, 1972, Ser. No. 304,662
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 B

233,363
GUIDE LIGHT
Paul E. Rochford, East Greenwich, and Lawrence P. Mellyn, Glocester, R.I., assignors to General Electric Company
Filed June 23, 1972, Ser. No. 265,817
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E

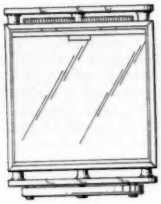
233,364
SHREDDER
Joseph W. Chambers, Sr., Rancho La Costa, Calif., assignor to Atomic Disposer Corporation, a subsidiary of Elixir Industries
Filed Jan. 26, 1973, Ser. No. 326,812
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 B



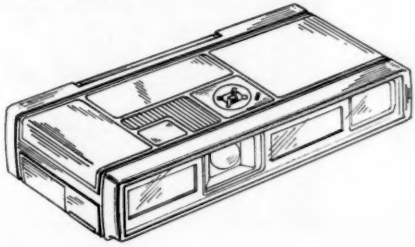
233,365
RECORD PLAYER
Shigenori Tomioka, Tokyo, Japan, assignor to Japan Metals & Chemicals Co., Ltd., Chuo-ku, Tokyo, Japan
Filed Dec. 8, 1972, Ser. No. 313,252
Claims priority, application Japan July 6, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



233,366
COMBINED RADIO AND PHOTOGRAPH CUBE
Morris Dweck, 442 Quentin Road, Brooklyn, N.Y. 11223
Filed May 14, 1973, Ser. No. 359,701
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

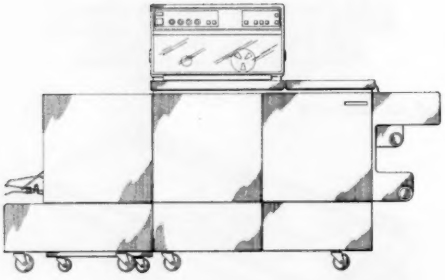


233,367
STILL CAMERA OR SIMILAR ARTICLE
Robert E. Bourke, Weston, Conn., assignor to GAF Corporation, New York, N.Y.
Filed Nov. 29, 1972, Ser. No. 310,436
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B

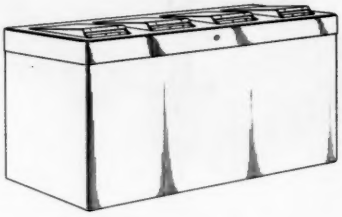


233,368
TRIPOD
Alfred Schimpf, Basel, Switzerland, assignor to H. Heer & Cie, Olten, Switzerland
Filed July 25, 1972, Ser. No. 274,918
Claims priority, application Switzerland May 9, 1972
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 G

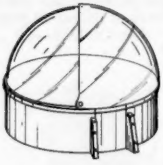
233,369
MICROFILM XEROGRAPHIC MACHINE
Leonard Schachner, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 13, 1972, Ser. No. 306,239
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



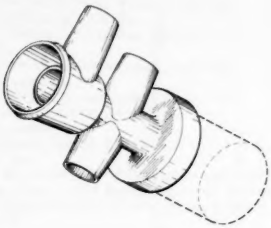
233,370
WALL MOUNTABLE MAIL DEPOSIT UNIT
Bill H. Bishop, 1111 S. Post Oak, Houston, Tex. 77027
Filed July 10, 1972, Ser. No. 269,968
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D74—9 R

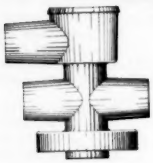


233,371
SUN DOME
Gregory P. Fila, Wingdale, N.Y. 12594
Filed July 28, 1972, Ser. No. 276,089
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 C

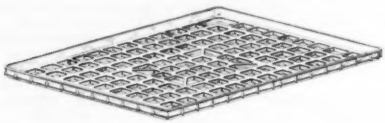


233,372
INTERMITTENT POSITIVE PRESSURE BREATHING MANIFOLD
Harold R. Havstad, Lakewood, and Donald F. Diedrich, Temecula, Calif., assignors to Hudson Oxygen Therapy Sales Company
Filed June 22, 1972, Ser. No. 265,336
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 G

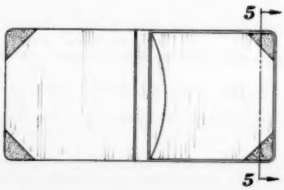




233,373
BREAD TRAY
Houston Rehrig, 100 Los Altos Drive, Pasadena, Calif. 91105
Filed Oct. 25, 1972, Ser. No. 300,552
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R

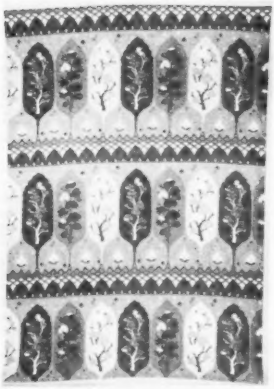


233,374
VIDEO TAPE CONTAINER
Georg Heeren, St. Paul, Minn., assignor to Blackbourn Binding Incorporated, St. Paul, Minn.
Filed Feb. 22, 1972, Ser. No. 228,427
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D

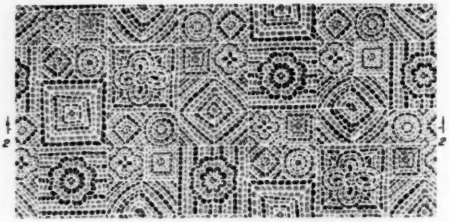


233,375
HOLDER FOR TAPE CASSETTES OR SIMILAR ARTICLE
Joseph L. Berkman, 48 Country Road, Mamaroneck, N.Y. 10543
Filed Apr. 20, 1973, Ser. No. 352,882
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D

233,376
TEXTILE FABRIC
Nancy Ann Scherer, Plainfield, N.J., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Nov. 2, 1972, Ser. No. 303,119
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 K



233,377
SOFT SURFACE FLOOR COVERING
Philip Nugent, 3920 Broadway, New York, N.Y. 10032
Filed Mar. 12, 1973, Ser. No. 340,189
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4 R



233,378
TUFTING MACHINE HOOK
Randel P. Smith and James R. Collier, Chattanooga, Tenn., assignors to The Singer Company, New York, N.Y.
Filed Mar. 8, 1972, Ser. No. 232,986
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22D DAY OF OCTOBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. W. Faber-Castell: *See—*
Katz, Otto; and Kranich, Werner, 3,842,466.

AB Broderna Ottosson & Co.: *See—*
Strom, Torsten Erik Theodor, 3,843,435.

AB Hill & Co.: *See—*
Fredricson, Yngve Albin Fritiof, 3,843,147.

AB Volvo Penta: *See—*
Bagge, Nils Olof Manus, 3,842,689.
Bergstedt, Karl Abdon, 3,842,789.

Abbott Laboratories: *See—*
Weiss, Ronald Eugene, 3,843,454.

Abel, Heinz: *See—*
Toepfl, Rosemarie; Abel, Heinz; and Maeder, Arthur, 3,843,391.

Abromavage, John C.; and Ryden, James W., to Amerco, Inc. Load damping frame hitch for vehicles towing a trailer. 3,843,162, Cl. 280-486.000.

ACF Industries, Incorporated: *See—*
Wicke, Charles H., 3,842,854.

Ackerman, Jacob; and Radici, Pierino, to Societa' Italiana Resine S.I.R. S.p.A. Process for the recovery of formaldehyde and phenol contained in waste waters. 3,843,643, Cl. 260-248.500.

Acuity Systems, Incorporated: *See—*
Cronsweet, Tom N., 3,843,240.

Adachi Kinichi; and Takaoka, Takeshi, to Matsushita Electric Industrial Co., Ltd. Heat-sensitive two color recording paper. 3,843,384, Cl. 117-36.900.

Adamovske Strojirny, narodni podnik: *See—*
Jiruse, Jaroslav, 3,843,116.

Adams, Albert John, to Chapman, A. W., Limited. Seal slide catch mechanism. 3,843,087, Cl. 248-430.000.

Adams, James E.: *See—*
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 3,843,230.
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 3,843,233.

Adams, John H., to Chevron Research Company. Hydraulic oil. 3,843,542, Cl. 252-75.000.

Addmaster Corporation: *See—*
Scozzafava, Milton V., 3,842,620.

Advanced Micro Devices, Inc.: *See—*
Giles, James N., 3,843,934.

Aerochem N. V.: *See—*
Wolf, Johannes Hendrik Leendert, 3,843,586.

Agency of Industrial Science & Technology: *See—*
Saito, Kiyosi, 3,843,339.

AGFA-Gevaert Aktiengesellschaft: *See—*
Schranz, Karl-Wilhelm; Schon, Erwin; and Hunicke, Wolfgang, 3,843,367.

AGFA-Gevaert N.V.: *See—*
Florens, Raymond Leopold; and Vandenabeele, Hubert, 3,843,364.
Van Poucke, Raphael Karel; De Cat, Arthur Henri; and Benoy, Gaston Jacob, 3,843,365.
Van Poucke, Raphael Karel; Benoy, Gaston Jacob; and De Cat, Arthur Henri, 3,843,366.

Aggogle Inc.: *See—*
Ricci, Vero, 3,843,120.

Ahmed, Adel Abdel, to RCA Corporation. Current amplifier. 3,843,933, Cl. 330-26.000.

Air Monitor Corporation: *See—*
De Baun, Kenneth W.; and Noll, Robert W., 3,842,678.

Air Products and Chemicals, Inc.: *See—*
Bechara, Ibrahim Selim; Milligan, Barton; and Ziv, Martin Hi, 3,843,648.
Spector, Marshall L.; and Brian, P. L. Thibaut, 3,843,789.

Aisin Seiki Co., Ltd.: *See—*
Miyao, Takayuki; Maeda, Hiroaki; and Sato, Masanori, 3,842,692.

Aisin Seiki Kabushiki Kaisha: *See—*
Wada, Akihiro; Sugiura, Fumio; and Ooka, Masaki, 3,842,929.

Aizawa, Tatsuo: *See—*
Matsumoto, Shoji; Yonaha, Noboru; and Aizawa, Tatsuo, 3,843,381.
Washio, Takaji; Iida, Kazumi; Tohi, Yasusuke; and Aizawa, Tatsuo, 3,843,251.

Ajinomoto Co., Inc.: *See—*
Akabori, Shiro; Shiio, Isamu; and Uchio, Ryosuke, 3,843,466.
Kubota, Koji; Onoda, Takiko; and Okumura, Shinji, 3,843,441.

Akabori, Shiro; Shiio, Isamu; and Uchio, Ryosuke, to Ajinomoto Co., Inc. Method of producing dicarboxylic acids by fermentation. 3,843,466, Cl. 195-28.00r.

Akamatsu, Takashi: *See—*
Matsuo, Masatoshi; Sakaguchi, Tadao; and Akamatsu, Takashi, 3,843,632.

AKG Akustische und Kino-Gerate Gesellschaft mbH: *See—*
Fidi, Werner, 3,843,840.

Aktiebolaget Leo (A/B Leo): *See—*
Kamme, Carl Gustaf, 3,843,776.

Aktiebolaget Tudor: *See—*
Sundberg, Erik Gustav, 3,843,412.

Akutagawa, Susumu: *See—*
Yagi, Misao; Sakaguchi, Toshiaki; Akutagawa, Susumu; and Komatsu, Akira, 3,843,742.

Akzo N.V.: *See—*
Kersten, Hilde; and Meyer, Gerhard, 3,843,723.

Alban, Clarence F. Composite breaker belt for pneumatic tires. 3,842,885, Cl. 152-361.00r.

Albarino, Robert Vincent; and Otocka, Edward Paul, to Bell Telephone Laboratories, Incorporated. Stabilized irradiation cross-linked PVC coated articles. 3,843,402, Cl. 117-232.000.

Albert, Roger: *See—*
Jose, Jean; Declaye, Joseph; Albert, Roger; and Bodart, Marcel, 3,843,264.

Alberta Helium Limited, mesne: *See—*
MacDonald, William; and Pan, Chuen-Yong, 3,842,515.

Alden Research Foundation: *See—*
Facchini, Bruno, 3,843,244.

Aldridge, Gerald Richard, to Du Pont de Nemours, E. I., and Company. 5,6,12,13-Di-isoquino-(4,3,-b: 4',3'-e)-pyrazine-5,12-diones. 3,843,653, Cl. 260-250.0bn.

Alexander, Carl J.; and Boudeman, Robert J., to Wells Manufacturing Corporation. Displacement indicator means for coil springs. 3,842,667, Cl. 73-141.0ab.

Alexander, John Henry: *See—*
Sterling, Henley Frank; and Alexander, John Henry, 3,843,392.

Alexander, Richard J., to Krause Milling Company. Art of manufacture modified amylaceous materials with condensed phosphates and urea. 3,843,377, Cl. 106-157.000.

Alexander, Willie L., 25% to McCullen, C. A. Safety bumper. 3,843,180, Cl. 293-74.000.

Alferness, Clifton A., to Medtronic, Inc. Electromedical pulse generator with continuous pulse width adjustment circuitry. 3,842,844, Cl. 128-422.000.

Alfriend, Theodoric B., Jr.; and Klopp, John H., to United States of America, Air Force. Cargo handling trailer. 3,843,156, Cl. 280-179.00r.

Allegheny Ludlum Industries, Inc.: *See—*
Kindlimann, Lynn E., 3,843,332.

Allen, Frank M.; De Diemar, Ronald B.; and Ehlert, Kenneth C., to Barber-Greene Company. Gyratory crusher frame and method of making same. 3,843,068, Cl. 241-285.00r.

Allen, Grant H.; and Perkins, Billie L., to Global Marine Inc. System and method for buoying the end of a wire mooring line. 3,842,780, Cl. 114-230.000.

Allen, John E., to Interlake, Inc. Coke quenching system. 3,843,461, Cl. 202-227.000.

Allen, John Ross: *See—*
Solomon, Karl; and Allen, John Ross, 3,843,843.

Allersma, Ties: *See—*
Hammel, Joseph J.; and Allersma, Ties, 3,843,341.

Allied Chemical Corporation: *See—*
Harrison, David Malcolm, 3,842,468.
Lewis, Donald J., 3,843,151.
Wortham, Joseph S., 3,843,701.

Allis-Chalmers Corporation: *See—*
Attia, Edward A., 3,843,856.
Coleman, Martin W., 3,842,714.
Wilson, Ronald W., 3,842,637.

Aluminum Company of America: *See—*
Brown, Melvin H., 3,843,463.
Dickey, John J., 3,842,574.

Alwin Manufacturing Company, Inc.: *See—*
Krueger, Archie S.; Slye, Norman J.; and Diring, James A., 3,843,218.

Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., to Owens-Illinois, Inc. Machine for producing a plastic-covered glass container. 3,843,316, Cl. 432-124.000.

Amerco, Inc.: *See—*
Abromavage, John C.; and Ryden, James W., 3,843,162.

American Cyanamid Company: *See—*
Berets, Donald Joseph, 3,843,232.
Bollyky, Laszlo Joseph, 3,843,549.
Lutz, Albert William; and Feeny, Richard William, 3,843,348.
Stretanski, Joseph Anthony; and Hoffman. Joseph Adrian, 3,843,597.
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American Gas Association, Inc.: *See—*
Riegel, Peter S.; Legue, Ronald; Nikodem, Leslie F., Jr.; and Slay, Willard, 3,842,864.

American Hoist & Derrick Company: *See—*
Brown, Archer W.; and Montgomery, James L., 3,842,984.

American Home Products Corporation: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., 3,843,681.
Humber, Leslie G., 3,843,727.
Santilli, Arthur A.; and Kim, Dong H., 3,843,645.

American Metal Climax, Inc.: *See—*
Southworth, Glen R.; Robbins, Peter M.; and Wills, Frank, 3,842,894.

American Waagner-Biro Company, Inc.: *See—*
Kemmetmueller, Roland, 3,843,458.

AMF Incorporated: *See—*
Wireman, Jack; Linda, Yorba; and Kosla, Leslie A., 3,843,482.

Amori, Joseph A. Conveyor means. 3,842,972, Cl. 198-220.0cb.

AMP Incorporated: *See—*
Lockard, Joseph L., 3,843,852.

Ampex Corporation: *See—*
Kroon, William L., 3,843,968.

Amsted Industries, Incorporated: *See—*
Hood, Charles N., II, 3,843,159.

Anaconda Company, The: *See—*
Payne, Thomas F., 3,843,498.

Andersen, Harry M., to Monsanto Company. Ethylene(vinyl chloride[N-methylolacrylamide] N-alkoxymethyl) acrylamide latices. 3,843,580, Cl. 260-29.6ta.

Anderson, Albert W., to General Electric Company. Direct current power control circuit. 3,843,912, Cl. 318-258.000.

Anderson, Clarence L., to Magnamatrix Corporation. Press for use in bookbinding and the like. 3,842,731, Cl. 100-264.000.

Anderson, David S.; and Kottke, Lawrence F., to Original Equipment Motors, Inc. Dual bobbin assembly for coils. 3,843,946, Cl. 336-90.000.

Anderson, John Dale, to Hesston Corporation. Tailgate control for stackers. 3,842,732, Cl. 100-270.000.

Anderson, Perry W.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,843,820.
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,843,821.

Anderson, Raymond A.: *See—*
Scanlon, John J.; Owen, Thomas G.; and Anderson, Raymond A., 3,842,739.

Anderson, Reuben E.: *See—*
Dresen, Stanley F.; and Anderson, Reuben E., 3,843,523.

Anderson, Richard N., to Anderson, V. E., Mfg., Co. Window structure. 3,842,540, Cl. 49-181.000.

Anderson, Robert L. Diver's pack. 3,842,611, Cl. 61-70.000.

Anderson, Robert N.; and Parlee, Norman A., to Parlee Anderson Corporation. Actinide nitride-fueled reactor and continuous method of operating the same. 3,843,765, Cl. 423-11.000.

Anderson, Robert N.; and Parlee, Norman A., to United States of America, Navy. Method of reprocessing nuclear fuels. 3,843,766, Cl. 423-11.000.

Anderson, V. E., Mfg., Co.: *See—*
Anderson, Richard N., 3,842,540.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Vehicle vacuum line priority valve. 3,842,931, Cl. 180-103.000.

Andrews, Alton M. Quick fastening screw device. 3,842,877, Cl. 151-14.00r.

Andrews, Harry E., to Andrews, L. P., & Co., Incorporated. Golf club with shiftable mercury mass. 3,843,135, Cl. 273-170.000.

Andrews, L. P., & Co., Incorporated: *See—*
Andrews, Harry E., 3,843,135.

Angelari, Richard D.: *See—*
Harvey, Gerald J.; and Angelari, Richard D., 3,843,522.

Angibaud, Rene M., to Societe Les Piles Wonder. Mounting apparatus for portable device. 3,843,083, Cl. 248-229.000.

Angstadt, John W.: *See—*
Wright, Edward S.; Angstadt, John W.; and Krolopp, Otto C., 3,843,406.

Anheuser-Busch, Incorporated: *See—*
Seeley, Robert D., 3,843,811.

Anikanov, Nikolai Vianovich: *See—*
Grachev, Leonid Pavlovich; Anikanov, Nikolai Vianovich; Zaks, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,842,962.

Annas, Robert F.; and Hinsberger, Vincent, to Paramount Health Equipment Corporation. Isotonic exercising apparatus having selective friction restraint. 3,843,118, Cl. 272-58.000.

Anthony, John D., Jr.; Faulhaber, Mark E.; and Smith, Edmund H., Jr., to Du Pont de Nemours, E. I., and Company. Optical-electrical web inspection system. 3,843,890, Cl. 250-563.000.

Anthony, Norman Howell: *See—*
Crossley, Ian Alexander; Kirk, Geoffrey Eric; Anthony, Norman Howell; and Bamber, Derek Robert, 3,843,279.

Aoshika, Masayuki: *See—*
Nanjyo, Toshio; and Aoshika, Masayuki, 3,843,106.

Aoyagi, Kazuo: *See—*
Kurose, Hisayuki; Kawase, Akira; Aoyagi, Kazuo; and Uchiyama, Noboru, 3,842,773.

Apikos, Dominic. Strippable wax coating compositions. 3,843,574, Cl. 260-28.5av.

Apken, Rainer; and Fritz, Egon, to Schlafhorst, W., & Co. Double needle row warp knitting machine and method of operating the same. 3,842,625, Cl. 66-87.000.

Aquarius Inc.: *See—*
Russell, Carl D., 3,842,988.

Araki, Shinichi: *See—*
Susuki, Rinnousuke; Hoshi, Hiroshi; Araki, Shinichi; Miyamoto, Shinzo; and Ishii, Masao, 3,843,037.

Argabright, Perry A.: *See—*
Kurtis, Soma; Argabright, Perry A.; and Presley, C. Travis, 3,843,374.

Armstrong, Michael J.; and Houtman, Richard L., to Steelcase Inc. Over drawer head support. 3,842,758, Cl. 108-98.000.

Armstrong Patents Co. Limited: *See—*
Stephens, Ronald Bertram, 3,842,482.

Arndt, Robert H., to Ralston Purina Company. Preparation of a simulated milk product. 3,843,828, Cl. 426-360.000.

Arnold, James Flinnoy, to Hydrotech International, Inc., mesne. Pipeline recovery tool and method. 3,842,612, Cl. 61-72.100.

Aronetics, Inc.: *See—*
Gardenier, Hugh E., 3,842,904.

Arrow Development Co., Inc.: *See—*
Morgan, Edgar A., 3,843,192.

Artamonov, Viktor Leonidovich: *See—*
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.

Arts, Marcus: *See—*
Plough, Charles T.; Arts, Marcus; Leitner, Michael; Russel, William; Marsman, Frank; and Eastwood, Keith, 3,843,949.

Artz, Klaus: *See—*
Desai, Nalin Binduprasad; Yayaraman, Onnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,843,625.

Asada, Hiroyuki: *See—*
Okada, Takeshi; Asada, Hiroyuki; and Nakamura, Shigeharu, 3,843,343.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Harada, Ikuo; Hamasaki, Masafumi; Maeda, Isao; and Izawa, Nobuyuki, 3,843,150.
Yano, Nobumitsu; Takahashi, Hideomi; and Hayasho, Yoshitaka, 3,843,803.

Asahi Toy Company: *See—*
Kishi, Yoshihiro, 3,842,928.

Asakawa, Kenichi: *See—*
Ohbu, Misao; and Asakawa, Kenichi, 3,843,417.

Asano, Hidejiro; and Oyagi, Yashichi, to Nippon Steel Corporation. Method for producing steel sheets of strips for making cans. 3,843,423, Cl. 148-12.000.

Asburg Universal, Inc.: *See—*
Asbury, Edward G., 3,842,999.

Asbury, Edward G., to Asburg Universal, Inc. Demolition bucket. 3,842,999, Cl. 214-145.000.

Aschberger, Anton A.; Avery, Jack L.; Cartwright, William J.; Dean, Geoffrey J.; Tysver, Oliver J.; Wolfe, Robert W.; and Bautz, Frederick H., to Continental Can Company, Inc. Can body shaper. 3,842,631, Cl. 72-63.000.

Asfura, Abraham C. Miselem. Combined gas trap and liquid separator. 3,842,856, Cl. 137-179.000.

Ashland Oil, Inc.: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,843,600.

Ashtabula Bow Socket Company: *See—*
Baginski, Martin R., 3,842,688.

Asselborn, Peter; Haase, Gerhard; and Menne, Guenther, to Felten & Guilleaume Kablewerke Aktiengesellschaft. Mobile integrated cable system for communication and energy-distribution purposes. 3,843,909, Cl. 317-99.000.

Associated Engineering Limited: *See—*
Atkins, Francis J.; and Waterson, Keith, 3,842,819.
Cowell, Timothy Anton Turton; and Brown, Dennis Cockburn, 3,842,818.

Atkins, Douglas R. Adjustable dual action shock absorber. 3,843,107, Cl. 267-64.00r.

Atkins, Francis J.; and Waterson, Keith, to Associated Engineering Limited. Ignition devices. 3,842,819, Cl. 123-169.0mg.

Atsumi, Minoru: *See—*
Yagi, Shizuo; and Atsumi, Minoru, 3,842,810.

Attia, Edward A., to Allis-Chalmers Corporation. Contact for a vacuum switch of single phase alloy. 3,843,856, Cl. 200-144.00b.

Atwood & Morrill Co.: *See—*
Prescott, Norman F., 3,842,717.

Aubury, John F. B.: *See*—
Portas, Donald; and Aubury, John F. B., 3,843,210.

Audio NSU Auto Union Aktiengesellschaft: *See*—
Wilmers, Gottlieb, 3,843,283.

Aumuller, Walter: *See*—
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,843,661.

Australia, Commonwealth of, care of Department of the Army: *See*—
Keuston, Kevin Hague, 3,843,545.

Automatic Switch Company: *See*—
O'Keefe, Robert F., 3,842,862.

Automobiles Peugeot: *See*—
Dera, Alain; and Besseau, Daniel, 3,843,181.

Avery, Jack L.: *See*—
Aschberger, Anton A.; Avery, Jack L.; Cartwright, William J.; Dean, Geoffrey J.; Tysver, Oliver J.; Wolfe, Robert W.; and Bautz, Frederick H., 3,842,631.

Avo Intern Transport B.V.: *See*—
Sprikkelman, Gerrit W. J., 3,842,997.

Awano, Tsuneo; Onishi, Kazutoshi; and Masuzawa, Isao, to Tokyo Keiki Co., Ltd. Inverter controlling circuit. 3,843,920, Cl. 321-44.000.

Ax, Venzens Anton: *See*—
Hunhausen, Hugo; and Ax, Venzens Anton, 3,842,446.

Axen, Udo F., to Upjohn Company, The. Endo-bicyclo[3.1.0]-hexane glycol intermediates for preparing prostaglandins E_1, A_1 and analogs thereof. 3,843,712, Cl. 260-468.00g.

Aykan, Kamran; Rogers, Donald B.; and Sleight, Arthur W., to Du Pont de Nemours, E. I., and Company. Catalyst compositions of scheelite crystal structure containing bismuth ions, divalent ions and cation vacancies. 3,843,553, Cl. 252-464.000.

Aykan, Kamran; Rogers, Donald B.; and Sleight, Arthur W., to Du Pont de Nemours, E. I., and Company. Catalyst compositions of scheelite crystal structure containing vanadium, bismuth and cation vacancies. 3,843,554, Cl. 252-468.000.

Babiec, John S., Jr., and Turley, Richard J., to Olin Corporation. Halogenated acetals as flame retardants for polyurethane foams. 3,843,569, Cl. 260-2.5aj.

Bach, Michael C.: *See*—
Pazer, Jerome; and Bach, Michael C., 3,842,629.

Bach-Simpson Limited: *See*—
Vollick, Carlisle N.; and Williams, Stanley J., 3,842,680.

Bacha, John D.; and Selwitz, Charles M., to Gulf Research & Development Company. Preparation of cyclopropyl cyanide from 4-chlorobutyronitrile. 3,843,709, Cl. 260-464.000.

Bacroix, Marcel Andre, to Pont-A-Mousson S.A. Method and apparatus for testing the helium tightness of tubular bodies. 3,842,659, Cl. 73-40.700.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Giese, Bernd; Jaeger, Peter; Koenig, Horst; and Brenner, Siegfried, 3,843,499.
Spaenig, Hermann; Dockner, Toni; and Frank, Anton, 3,843,676.

Badische Anilin-& Soda-Fabrik Aktiengesellschaft: *See*—
Fitterer, Horst; Uhl, Karl; Guenther, Friedrich; Schmidts, Kurt; and Gaiser, Dieter, 3,843,035.

Bagge, Nils Olof Manus, to AB Volvo Penta. Multiple station control system. 3,842,689, Cl. 74-479.000.

Baginski, Martin R., to Ashtabula Bow Socket Company. Foot retaining device for a bicycle pedal. 3,842,688, Cl. 74-594.600.

Baglai, Vitaly Mikhailovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; and Baglai, Vitaly Mikhailovich, 3,842,897.
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.

Bagnulo, Luigi. Joints for conduits having a continuous corrosion-resistant lining. 3,843,170, Cl. 285-55.000.

Bailey, Wayne W.; and McCarthy, Paul R., to Gulf Research & Development Company. Aluminum complex soap grease containing calcium carbonate. 3,843,528, Cl. 252-18.000.

Bainbridge, Cecil, to Rohr Corporation. Deflection compensating unified two part track for sliding door and method of making same. 3,842,462, Cl. 16-94.00r.

Bair, Clyde F. Disaster valve. 3,842,852, Cl. 137-39.000.

Baisch, J. Carroll: *See*—
Colella, Alfred S., 3,843,008.

Baker, Billy Eugene; and Galle, Edward M., to Hughes Tool Company. Acoustic methods for fracturing selected zones in a well bore. 3,842,907, Cl. 166-249.000.

Baltimore and Ohio Railroad Company, The: *See*—
James, William R.; and Hardy, Charles J., 3,843,185.

Bamber, Derek Robert: *See*—
Crossley, Ian Alexander; Kirk, Geoffrey Eric; Anthony, Norman Howell; and Bamber, Derek Robert, 3,843,279.

Bandy, Leon D. Tethered ball and resilient covering for both right and left hands. 3,843,126, Cl. 273-95.00a.

Banis, Peter A.: *See*—
Walters, Armon J.; and Banis, Peter A., 3,842,534.

Barabas, Zoltan, to Gabonalermesztesi Kutato Inlezet. Method of production of hybrid seed-grain. 3,842,538, Cl. 47-58.000.

Baranyovits, Francis Leslie Charles; and Kay, Ian Trevor, to Imperial Chemical Industries Limited. Heterocyclic compounds and compositions. 3,843,655, Cl. 260-256.50r.

Barber, Hartley E., to United States of America, Air Force. Liquid expulsion subsystem having orientation responsive pump. 3,843,024, Cl. 222-207.000.

Barber-Greene Company: *See*—
Allen, Frank M.; De Diemar, Ronald B.; and Ehlert, Kenneth C., 3,843,068.

Bardeau, William Milton: *See*—
Bardeau, William Milton; and Welty, Frank (said Welty assor. to said), 3,843,020.

Bardeau, William Milton; and Welty, Frank, said Welty assor. to said Bardeau, William Milton. Automatic liquid dispensing apparatus. 3,843,020, Cl. 222-58.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See*—
Schippers, Heinz, 3,842,578.

Barnes-Moss, Howard William, to Richardo & Co., Engineers (1927) Limited. Piston cooling and/or small-end bearing lubrication arrangement for I.C. engines. 3,842,938, Cl. 184-6.500.

Barnetche-Gonzalez, Eduardo. Percussion tools. 3,842,920, Cl. 175-299.000.

Barone, Anthony P. Device for removable attachment to a wall mounted telephone. 3,843,166, Cl. 281-15.00b.

Barone, Bruno J.: *See*—
Chremos, George N.; and Barone, Bruno J., 3,843,694.

Barr, Berthold: *See*—
Nickl, Josef; Muller, Erich; Barr, Berthold; and Roch, Josef, 3,843,638.

Barr, Ralph E., Jr.: *See*—
Carlson, Robert T.; and Barr, Ralph E., Jr., 3,843,914.

Barrett, James H., to Rohm & Haas Company. Macroreticular vinyl benzyl chloride polymers. 3,843,566, Cl. 260-2.10e.

Bartlett, Billy G. Apparatus for laying roofing materials on a sloping roof. 3,842,934, Cl. 182-37.000.

Bartling, Gerhard, to SKF Kugellagerfabriken GmbH. Apparatus for temporarily storing thread in a spindleless spinning machine. 3,842,579, Cl. 57-34.00r.

Barton, Hugh M., Jr.; and Gray, Peter R., to Phillips Petroleum Company. Detection of elements by irradiating material and measuring scattered radiation at two energy levels. 3,843,881, Cl. 250-269.000.

Barton, John: *See*—
Mills, Anthony Mark; Wortley, William; and Barton, John, 3,842,879.

Bassist, Rudolph G., 1/2 to Travis Mills Corporation. Means for rolling up tubular fabric produced by a circular knitting machine. 3,842,627, Cl. 66-151.000.

Bathge, Gunter: *See*—
Schmitt, Paul; and Bathge, Gunter, 3,842,638.

Bauer, Alfred. Type head for typewriting machine. 3,842,959, Cl. 197-52.000.

Bauer Bros. Co., The: *See*—
Horstman, Anton J.; and McNeil, William M., 3,843,065.

Bauer Ordnance Company: *See*—
Bauer, Russell E.; and Bauer Ordnance Company, 3,842,458.

Bauer, Russell E.; and Bauer Ordnance Company. Wire cutter bayonet or knife. 3,842,458, Cl. 7-5.600.

Bauer, William J. System for disposing of sewage sludge. 3,842,764, Cl. 111-7.000.

Baumeler, Hans: *See*—
Speissegger, Werner; and Baumeler, Hans, 3,842,516.

Baumer, Wilhelm: *See*—
Schmitt, Dieter; Baumer, Wilhelm; and Stein, Alfred, 3,843,325.

Bausch & Lomb Incorporated: *See*—
Clark, James A., 3,842,790.

Bautz, Frederick H.: *See*—
Aschberger, Anton A.; Avery, Jack L.; Cartwright, William J.; Dean, Geoffrey J.; Tysver, Oliver J.; Wolfe, Robert W.; and Bautz, Frederick H., 3,842,631.

Baxter, John Kenneth, Jr.: *See*—
Smith, James; and Baxter, John Kenneth, Jr., 3,842,595.

Baxter Laboratories, Inc.: *See*—
Hainski, Martha B.; and Ordonez, Guido A., 3,843,777.
Moskowitz, Gerard J., 3,843,442.

Baychem Corporation: *See*—
Hudson, George A.; and Rich, Joseph M., 3,843,390.

Bayer Aktiengesellschaft: *See*—
de Montigny, Armand; and Buchner, Werner, 3,843,702.
Findeisen, Kurt; Holtschmidt, Hans; and Wagner, Kuno, 3,843,652.
Hoffmann, Hellmut; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,843,679.
Hombach, Rudolf; and Theisen, Dieter, 3,843,590.
Lachmann, Burkhard; and Rosenkranz, Hans Jurgen, 3,843,729.
Logemann, Heino; Suling, Carlhans; and Lorenz, Gunter, 3,843,578.
Schmittmann, Hans-Richard, 3,842,584.
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Widdig, Arno; Kuhle, Engelbert; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul Ernst, 3,843,715.

Baysinger, Robert L., to Emerson Electric Co. Burner control system. 3,843,049, Cl. 236-1.00c.

BBC Brown Boveri & Company Limited: *See*—
Meylan, Pierre; and Hausmann, Herbert, 3,843,281.

Beam Products Manufacturing Company: *See*—
Zonker, Lawrence C.; and Jensen, Ervin F., 3,843,338.

Beatrice Foods Co.: *See*—
Ziccarelli, Salvatore F., 3,843,808.

Beatrice Foods Co., mesne: *See*—
Golden, Gerald; Wrobel, Charles V., Jr.; and Dian, Walter, 3,843,433.

Bechara, Ibrahim Selim; Milligan, Barton; and Ziv, Martin Hi, to Air Products and Chemicals, Inc. Method for preparing N-amino alkylated morpholines. 3,843,648, Cl. 260-247.50r.

Bechstein, Herbert; Hofmann, Eberhard; Jaenke, Hans-Jurger; Muller, Rolf; Ritter, Ernst; and Staudt, Heinrich, to Bosch, Robert, GmbH. Centrifugal governor for controlling the RPM of injection type internal combustion engines. 3,842,815, Cl. 123-140.00r.

Bechtel, Thomas F., to United States of America, Air Force. Apparatus for the direct measurements of thermal stresses. 3,842,654, Cl. 73-15.600.

Beck, Ralph A.: *See*—
Betley, Raymond A.; and Beck, Ralph A., 3,843,470.

Becker, Josef: *See*—
Schneider, Heinz; and Becker, Josef, 3,843,090.

Becker, Rudolf, to Linde Aktiengesellschaft. System for the discharging of a transport receptacle for liquefied gas. 3,842,613, Cl. 62-50.000.

Beckman Instruments, Inc.: *See*—
Jerrold-Jones, Paul, 3,843,506.
Schmidt, William L.; and Wright, Herschel E., 3,843,045.

Beckman Insturments, Inc.: *See*—
Kaye, Wilbur I., 3,843,268.

Beckman, Joseph Alfred: *See*—
Kyker, Gary Stephen; Beckman, Joseph Alfred; Halasa, Adel Farhan; and Hall, James Edward, 3,843,596.

Behrenz, Wolfgang: *See*—
Hoffmann, Hellmut; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,843,679.

Beisang, Arthur A.; and Ersek, Robert A., to Genetic Laboratories, Inc. Cellular skin patch. 3,842,831, Cl. 128-155.000.

Beitzinger, Kurt: *See*—
Fess, Emil; Beitzinger, Kurt; and Koblitz, Werner, 3,842,624.

Belanger Inc.: *See*—
Belanger, James A., 3,842,547.

Belanger, James A., to Belanger Inc. Hinge type fill unit with integral pin construction for cylindrical hub units. 3,842,547, Cl. 51-334.000.

Belden Corporation: *See*—
Hutchison, Donald W.; and Stolle, Mark A., 3,843,831.

Bell & Howell Co.: *See*—
Gaynor, Joseph, 3,843,361.

Bell & Howell Company: *See*—
Moscaret, Eugene J.; and Soran, Thomas C., 3,843,242.

Bell, Malcolm R., to Sterling Drug Inc. β-[3-(4-Chlorobenzoyl)-2-methyl-6-methoxy-1-indole]-acetic acids. 3,843,683, Cl. 260-326.13r.

Bell Northern Research Ltd.: *See*—
Maheux, Peter Francis, 3,843,951.

Bell Telephone Laboratories, Incorporated: *See*—
Albarino, Robert Vincent; and Otocka, Edward Paul, 3,843,402.
Paola, Carl Ralph, 3,842,544.

Beloit Corporation: *See*—
Betley, Raymond A.; and Beck, Ralph A., 3,843,470.

Belyaev, Leonid Mikhailovich: *See*—
Dobrzhansky, Georgy Fedorovich; Chestmir, Barta; Belyaev, Leonid Mikhailovich; Silvestrova, Iraida Mikhailovna; and Pisarevsky, Jury Vladimirovich, 3,843,234.

Bement, Laurence J., to United States of America, National Aeronautics and Space Administration. Method of making an explosively welded scarf joint. 3,842,485, Cl. 29-470.100.

Benckiser, Joh. A., GmbH: *See*—
Hustede, Helmut; and Siebert, Diethelm, 3,843,465.
Kuhnert, Peter; and Luetz-Binder, Doris, 3,843,812.

Bendix Corporation, The: *See*—
Bridges, Robert M.; and Jason, John J., 3,843,829.
Shupe, David M., 3,843,258.

Bennett, James; and Parva, Ashby, to Specialized Tapes Limited. Industrial tapes. 3,842,628, Cl. 66-193.000.

Bennett, Kenneth R.; and Crownover, Joseph W., to GTI Corporation. Control of rate of change of resistance as a function of temperature in manufacture of resistance elements. 3,842,495, Cl. 29-620.000.

Bennett, Vern B. Painters wheel spinner. 3,843,000, Cl. 214-340.000.

Benoy, Gaston Jacob: *See*—
Van Poucke, Raphael Karel; De Cat, Arthur Henri; and Benoy, Gaston Jacob, 3,843,365.
Van Poucke, Raphael Karel; Benoy, Gaston Jacob; and De Cat, Arthur Henri, 3,843,366.

Benrus Corporation: *See*—
Lupoli, Peter John, 3,842,585.

Berets, Donald Joseph, to American Cyanamid Company. Electrochromic light modulating devices having a palladium counter electrode. 3,843,232, Cl. 350-160.00r.

Berg, Rudolph G.: *See*—
Tate, Bryce E.; and Berg, Rudolph G., 3,843,672.

Berger, James K., to Computer Design Corporation. Magnetically recorded clock reading circuit. 3,843,965, Cl. 360-51.000.

Bergman, David L., to United States of America, Navy. Gated clock multivibrator. 3,843,938, Cl. 331-108.00d.

Bergstedt, Karl Abdon, to AB Volvo Penta. Hydraulic trim/tilt system for outboard propulsion units. 3,842,789, Cl. 115-41.0ht.

Berkun, Earl E., to Cosco, Inc. Clothes hamper. 3,843,222, Cl. 312-257.00a.

Bernard, Walter J., to Sprague Electric Company. Tantalum pellet system and methods of making and using the same. 3,843,492, Cl. 204-25.000.

Bernzomatic Corporation: *See*—
Nelson, John M., 3,843,311.

Berol Corporation: *See*—
Talbott, John W.; and Logan, James D., 3,843,756.

Berry Metal Company: *See*—
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Berthoud, Francois: *See*—
Dubois, Gerald; and Berthoud, Francois, 3,842,591.

Bertrand, Marcel J., to Uniroyal Aktiengesellschaft. Radial ply tire with reinforcing belt. 3,842,884, Cl. 152-361.00r.

Bertrand, Robert G., to Dow Corning Corporation. Metal working lubricant compositions. 3,843,529, Cl. 252-30.000.

Besseau, Daniel: *See*—
Dera, Alain; and Besseau, Daniel, 3,843,181.

Betley, Raymond A.; and Beck, Ralph A., to Beloit Corporation. Flexible trailing elements in a papermaking machine headbox having projections thereon extending into the slurry flow. 3,843,470, Cl. 162-343.000.

Bettge, George W.: *See*—
Perricone, Alphonse C.; Young, Homer F.; Bettge, George W.; and Enright, Dorothy P., 3,843,524.

Betts, Max William: *See*—
Flavell, John; Jeffcoat, Keith; and Betts, Max William, 3,842,623.

Beversdorf, Samuel Thomas. Mute having means for eliminating unresponsive notes in brass instruments. 3,842,706, Cl. 84-400.000.

Bevilacqua, Frank; Dietrich, Joseph R.; Groves, Malcolm D.; and Flinn, William S., to Combustion Engineering, Inc. Top actuated reactor control system. 3,843,471, Cl. 176-36.00r.

Beville, Robert Earl; Hofer, Bruce Edward; and Peek, William H., to Tektronix, Inc. Counter having selective direction and variable rate control. 3,843,873, Cl. 235-92.00v.

Beyn, Edgar Joachim, to SCM Corporation. Process for spray drying pigment. 3,843,380, Cl. 106-300.000.

Bezzecchi, Carlo. Spreading spout for fertilizer spreading machines of the swinging tube type. 3,843,029, Cl. 222-533.000.

Bibighaus, Fred W., superior Tube Company. Tube rolling mill for producing tubing with various external configurations. 3,842,635, Cl. 72-208.000.

Bickley Furnaces Incorporated: *See*—
Remmey, George Bickley, 3,843,317.

Bielfeldt, Friedrich Bernd; and Kamm, Artur, to Kranss-Maffei AG. Injection system for ganged injection molds. 3,843,294, Cl. 425-247.000.

Bier, Kenneth C., to Colt Industries Operating Corporation. Exhaust gas recirculation system. 3,842,814, Cl. 123-119.00a.

Bier, Milan. Apparatus and technique for preservation of isolated organs through perfusion. 3,843,455, Cl. 195-127.000.

Bierenbaum, Harvey S.; Daley, Lawrence R.; Zimmerman, Daniel; and Hay, Ian L., to Celanese Corporation. Process for preparing a thermoplastic microporous film involving a cold stretching step and multiple hot stretching steps. 3,843,761, Cl. 264-210.00r.

Biesmans, Robert, to Elphiac. Method of contracting or compressing, machine for performing the method and articles produced according to the method. 3,842,644, Cl. 72-342.000.

Biland, Hans Rudolf: *See*—
Leuthi, Christian; Biland, Hans Rudolf; and Duennenberger, Max, 3,843,716.
Piller, Bernhard; Meier, Max; Dunnenberger, Max; Biland, Hans Rudolf; and Luthi, Christian, 3,843,371.

Biles, Jerry W.: *See*—
Kelseaux, Ray M.; and Biles, Jerry W., 3,842,607.

Billgren, Karl Lennart; and Hansson, Hans, said Billgren, Karl L., assor. to Hansson, Hans. Airline passenger building. 3,842,553, Cl. 52-175.000.

Bird, Forrest M. Pediatric ventilator. 3,842,828, Cl. 128-145.800.

Birkholz, Manfred: *See*—
Piatkowski, Paul; and Birkholz, Manfred, 3,843,275.

Bischoff Chemical Corporation: *See*—
Greenberg, Walter H.; and Nussbaum, Frank J., 3,843,295.

Bishop, Birgil M. Plant growth composition and structure. 3,842,537, Cl. 47-37.000.

Bjerknes, Anders, to Staal & Stil A/S. Vertically adjustable column, particularly for chairs and the like. 3,843,271, Cl. 403-104.000.

Black and Decker Manufacturing Company, The: *See*—
Gerke, Burton Elwood, Jr.; and Rohr, Lewis Hampton, 3,843,224.

Blau KG Fabrik Fuer Kraftfahrzeugteile: *See*—
Blau, Werner; and Gerdes, Theo, 3,843,015.

Blau, Werner; and Gerdes, Theo, to Blau KG Fabrik Fuer Kraftfahrzeugteile. Screw cap for containers. 3,843,015, Cl. 220-288.000.

Blaw-Knox Food and Chemical Equipment, Inc.: *See*—
Wright, Edward S.; Angstadt, John W.; and Krolopp, Otto C., 3,843,406.

Blevens, Bertram G. Braking system. 3,842,946, Cl. 188-24.000.

Blonn, George W., Sr., to General Motors Corporation. Reversing, throttle and brake controller with interlocks. 3,842,653, Cl. 74-878.000.

Bloom, Joseph Louis, to Lucas, Joseph, (Industries) Limited. Speed responsive governor mechanism. 3,842,682, Cl. 73-509.000.

Bloom, Stephen A., to Maxium Security Systems International, Inc. Wall mounted security box. 3,842,761, Cl. 109-59.000.

Blumenthal, Guenter; and Krohm, Reinold, to Kloeckner-Werke AG. Travelling mine roof support with scraper conveyor for use with mechanical mining apparatus. 3,842,966, Cl. 198-126.000.

Bobo, Frank E. Gas valve. 3,842,858, Cl. 137-458.000.

Bochanov, Viktor Nikolaevich; Minchenko, Veniamin Alexandrovich; and Schipitsin, Svyatoslav Sergeevich. Device for shaping spherical pellets. 3,843,299, Cl. 425-332.000.

Bodart, Marcel: *See—*
Jose, Jean; Declaye, Joseph; Albert, Roger; and Bodart, Marcel, 3,843,264.

Bodinaux, Gaston Jean Olivier, to Les Forges de Zeebrugge S.A. Arming device for rocket type projectile launching tube. 3,842,711, Cl. 89-1.807.

Boeglin, Albert F., to International Minerals & Chemical Corporation. Production of white potassium sulfate crystals. 3,843,772, Cl. 423-551.000.

Boehm, Gail M.: *See—*
Morrisett, O. L.; and Boehm, Gail M., 3,842,905.

Boehringer Ingelheim GmbH: *See—*
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Boehringer Mannheim GmbH: *See—*
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Boeing Company, The: *See—*
Boone, Jimmie H.; Chenkovich, Gary A.; Corcoran, Brian F.; Marley, Arley C., III; and Simpson, Robert D., 3,843,077.
Harting, Darrell R.; and Taylor, John W., 3,842,663.
Mercer, Paul W., 3,842,496.
Smith, Alan W.; and Nelson, Donald J., 3,843,351.

Bogel, Martin; and Hurwitz, Marvin J., to Rohm and Haas Company. Moldable and/or thermoformable acrylic polymers and processes for the production thereof. 3,843,612, Cl. 260-78.50r.

Bogosh, Donald. Workholding and positioning system. 3,843,109, Cl. 269-22.000.

Bogue, Irving R., to Rogers Corporation. Bearing. 3,843,962, Cl. 308-187.000.

Bogunovich, Henrietta A.: *See—*
Bogunovich, Ronald A.; and Bogunovich, Joseph V. (said Bogunovich, Joseph V., assor. to), 3,843,174.

Bogunovich, Joseph V.: *See—*
Bogunovich, Ronald A.; and Bogunovich, Joseph V., 3,843,174.

Bogunovich, Ronald A.; and Bogunovich, Joseph V., said Bogunovich, Joseph V., assor. to Bogunovich, Henrietta A. Anti-theft door-locking apparatus. 3,843,174, Cl. 292-166.000.

Bohn, Gerhard: *See—*
Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, 3,842,748.

Boiko, Georgy Alexandrovich: *See—*
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.

Bollyky, Laszlo Joseph, to American Cyanamid Company. Chemiluminescent compositions containing polycarbonyl compounds. 3,843,549, Cl. 252-188.3cl.

Bonafede, William E.: *See—*
Maynard, Arthur W., 3,842,769.

Bondarenko, Oleg Petrovich: *See—*
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.

Bondie, Dale J.; Sutton, Robert S.; and Lewelling, James D., to Ex-Cell-O Corporation. Machine tool with automatic tool changing means. 3,842,712, Cl. 90-11.000.

Bonikowski, Leszek, to Wytwornia Silmkow Wysokopreznych Prezedsiebiorstwo Panstwowe. Silencer for internal combustion engines. 3,842,940, Cl. 181-50.000.

Boone, Jimmie H.; Chenkovich, Gary A.; Corcoran, Brian F.; Marley, Arley C., III; and Simpson, Robert D., to Boeing Company, The. Automatic approach landing and go-around roll axis control system for aircraft. 3,843,077, Cl. 244-77.00a.

Booth, Stuart Eric, to British Non-Ferrious Metals Research Association, The. Method and apparatus for controlling low pressure die casting. 3,842,893, Cl. 164-4.000.

Borel, Joseph; Deutsch, Jean-Claude; Labrunie, Guy; and Robert, Jacques, to Commissariat a l'Energie Atomique. Liquid crystal diffraction grating. 3,843,231, Cl. 350-160.0lc.

Borg-Warner Corporation: *See—*
Syria, Ronald L., 3,843,207.

Borg-Warner Limited: *See—*
Laing, James Morrison, 3,842,481.

Bornhorst, Walter J.; and Coleman, Steven J., to Thermo Electron Corporation. Disposable aspirator. 3,843,016, Cl. 220-306.000.

Borst, Stephen Lyle, to Combustion Engineering, Inc. Large liquid metal valve actuator. 3,842,601, Cl. 60-326.000.

Borum, Otis C., to Farenwald Enterprises, Inc. Boat trailer. 3,842,998, Cl. 214-84.000.

Bosanac, Robert E., to Standard Oil Company (Indiana). Stage separator for liquid-liquid multi-staged packed tower. 3,843,328, Cl. 23-270.500.

Bosch, Robert, GmbH: *See—*
Bechstein, Herbert; Hofmann, Eberhard; Jaenke, Hans-Jurger; Muller, Rolf; Ritter, Ernst; and Staudt, Heinrich, 3,842,815.
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Bottorf, Robert G., to FMC Corporation. Floating water screen. 3,843,520, Cl. 210-161.000.

Bottorff, Edmond M.: *See—*
Jackson, Billy G.; Stamper, Martha C.; and Bottorff, Edmond M., 3,843,642.

Bouboulis, Constantine J., to Esso Research and Engineering Company. Catalytic epoxidation with molecular oxygen. 3,843,691, Cl. 260-348.50v.

Boucher, Armand R., to Seagram, Joseph E., & Sons, Inc. Whiskey barrel. 3,842,723, Cl. 99-277.100.

Boucher, Harry, to Gardner-Denver Company. Recording instrument for determining rate of penetration in a borehole. 3,842,507, Cl. 33-134.00r.

Boudeman, Robert J.: *See—*
Alexander, Carl J.; and Boudeman, Robert J., 3,842,667.

Bourg, Haden J., Jr., to Westinghouse Electric Corporation. Process for producing silver-oxygen-cesium photon converter. 3,843,405, Cl. 117-217.000.

Boven, Jan: *See—*
Molenaar, Arian; Boven, Jan; and Van den Meerakker, Johannes Engelbertus Adrianus Maria, 3,843,373.

Bowen, David, Jr., to Monsanto Company. Polymerization process. 3,843,610, Cl. 260-78.00r.

Brace, Neal O.: *See—*
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Bradatsche, Edmond: *See—*
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Bradley, Clifford D.: *See—*
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Bradshaw, Harry; and Powell, Barney R., to Standard Forge and Axle Company, Incorporated. Heat treating apparatus. 3,843,102, Cl. 266-4.00e.

Brady, Donnie G., to Phillips Petroleum Company. Synthesis of esters. 3,843,719, Cl. 260-476.00r.

Brain, Thomas John Stirrat, to National Research Development Corporation. Improvements in measuring the velocity of gases. 3,842,670, Cl. 73-194.00f.

Brandl, Hermann J.: *See—*
Lau, Gunther; Bradatsche, Edmond; and Brandl, Hermann J., 3,842,795.

Brantley, Jordan W.: *See—*
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Braun Aktiengesellschaft: *See—*
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Brendgord, Thomas, to General Partitions Mfg. Corporation. Partition made of foam material. 3,842,556, Cl. 52-239.000.

Brenner, Lawrence A.; and Scholl, Charles H. Slat conveyor. 3,842,970, Cl. 198-195.000.

Brenner, Siegfried: *See—*
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Brian, P. L. Thibaut: *See—*
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Bridges, Robert M.; and Jason, John J., to Bendix Corporation, The. Center strength member cable. 3,843,829, Cl. 174-36.000.

Bridgestone Tire Company Limited: *See—*
Kitamoto, Yoshiyuki; Tanaka, Makoto; and Yoshimura, Nobuya, 3,843,292.

Brighton, Carl T.; Friedenberg, Zachary B.; and Redka, William, to United States of America, Navy. Constant current power pack for bone healing and method of use. 3,842,841, Cl. 128-419.00r.

Brindell, Gordon D.; and Macander, Rudolph F., to Quaker Oats Company, The. Rubbers stabilized with polyphenylene ethers and process thereof. 3,843,599, Cl. 260-45.85c.

Bristol-Myers Company: *See—*
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Rubinfeld, Joseph; Lemiuex, Raymond Urgel; and Raap, Rintje, 3,843,637.

Briston-Myers Company: *See—*
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British Iron and Steel Research Association: *See—*
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British Steel Corporation: *See—*
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Bronicki, Lucien Y.; and Yogev, Amnon, to Ormat Turbines (1965) Ltd. Closed rankine cycle power plant. 3,842,593, Cl. 60-671.000.

Bronov, Mark Vladimirovich: *See—*
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Bronstien, Edward L., Jr., to United States Bedding Company, The. Upholstered frame means for sofa beds. 3,842,456, Cl. 5-353.100.

Brooke, Christopher Miles: *See—*
Farminer, Kenneth Wilfrid; and Brooke, Christopher Miles, 3,843,558.

Brooks, Dean P.: *See—*
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Brooks, Frank M., Jr., to Brooks Products, Inc. Meter box. 3,843,013, Cl. 220-55.00k.

Brooks Products, Inc.: *See—*
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Brothers, Jack; and Pentel, Jerry, to United States of America, Army. Subprojectile launched from telescopic tubes. 3,842,741, Cl. 102-69.000.

Brown & Williamson Tobacco Corporation: *See—*
Summers, Thomas Wade, 3,842,978.

Brown, Archer W.; and Montgomery, James L., to American Hoist & Derrick Company. Crane counterbalancing trailer assembly. 3,842,984, Cl. 212-49.000.

Brown, Charles H.; and Robinson, Robert W., to Sperry Rand Corporation. Altitude computer apparatus. 3,842,676, Cl. 73-384.000.

Brown, David Richard, to British Steel Corporation. Process for preparing zinc coated ferrous metal substrated having improved resistance spot welding characteristics. 3,843,494, Cl. 204-34.000.

Brown, Dennis Cockburn: *See—*
Cowell, Timothy Anton Turton; and Brown, Dennis Cockburn, 3,842,818.

Brown, John Colin; and Keogh, Patrick Joseph, to Ilford Limited. Bis-1(1,2,4-triazole-3-selenols). 3,843,673, Cl. 260-308.00r.

Brown, Loren W. Modular building facade. 3,842,557, Cl. 52-301.000.

Brown, Martin M.; and Krawczak, Lawrence, to Robin Products Company. Resilient buffer assembly. 3,842,565, Cl. 52-716.000.

Brown, Melancthon S.; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. N-chlorothio carbamates. 3,843,689, Cl. 260-346.20r.

Brown, Melancthon S., to Chevron Research Company. Method for controlling bacteria and algae with N-tetraholoethylthio carboxamides. 3,843,792, Cl. 424-320.000.

Brown, Melvin H., to Aluminum Company of America. Evaporative method. 3,843,463, Cl. 203-49.000.

Brown, Omar L., to Fraze, Ermal C. Easy open can end/and hinged opening tab. 3,843,012, Cl. 220-269.000.

Brown, Paul Douglas. Game apparatus for playing and recording successive plays in a game. 3,843,133, Cl. 273-136.00r.

Brown, Philip H.; and Reeves, Robert E., to Inland Container Corporation. Container partitions. 3,843,039, Cl. 229-28.00r.

Brown, Russell L. Shock absorbing rail assembly. 3,842,564, Cl. 52-716.000.

Brown, William C., to United States of America, Navy. Magnetic field geometry for crossed-field devices. 3,843,904, Cl. 315-39.710.

Bruneau, Jacques: *See—*
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Bruner, Leonard Bretz, to Stauffer Chemical Company. Hydraulic elastomer. 3,843,601, Cl. 260-46.50g.

Brunswick Corporation: *See—*
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Buckler, Robert Thomas; and Hartzler, Harold Eugene, to Miles Laboratories, Inc. Substituted beta-arylamidoacrylic acids. 3,843,710, Cl. 260-465.00d.

Bucyrus-Erie Company: *See—*
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Budzynski, Leonard M.: *See—*
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Buehler, Arthur; Schuetz, Hans Ulrich; and Hoelzle, Gerd, to Ciba-Geigy AG. Anthraquinone dyestuffs. 3,843,695, Cl. 260-372.000.

Buehler, John D.: *See—*
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Buell, Donald D. Portable weatherproof heating unit for softening PVC conduit. 3,843,858, Cl. 219-10.490.

Buenzle, Frederick L. Golf practice and amusement apparatus. 3,843,136, Cl. 273-176.00b.

Buerger, Herbert, to Del-Met Corporation. Wire wheel simulating wheel cover. 3,843,201, Cl. 301-37.0ss.

Bufkin, Guydell O.; and Moore, Thomas P., to Pioneer Natural Gas Company. Fluid sampling process and apparatuses therefor. 3,842,677, Cl. 73-421.50r.

Bukac, Zbynek; and Sebenda, Jan, to Ceskoslovenska Akademie ved. Preparing polyamides by anionic polymerization of lactams. 3,843,608, Cl. 260-78.00l.

Bunker-Ramo Corporation, The: *See—*
Kehl, Lawrence Joseph; Janis, Robert Gerald; and Spaulding, Tedford Hollace, 3,842,497.

Burge, Anthony R., to Crosfield Business Machines Limited. Banding machines. 3,842,572, Cl. 53-198.00r.

Burger, Hans, to Georg Fischer Aktiengesellschaft. Furnace-top distributor for shaft furnaces. 3,843,104, Cl. 266-27.000.

Burgess, William R., to Continental Water Conditioning Corporation. Quick-disconnect manifold assembly. 3,842,870, Cl. 141-286.000.

Burke, Albert C. Auto arm rest. 3,843,196, Cl. 297-417.000.

Burke, Nelson W., to Honeywell Inc. Bidirectional line driver-receiver circuit. 3,843,834, Cl. 178-58.00a.

Burke, William R.: *See—*
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Burkoth, Terry, to Syva Company. Photolytically activated coupling to polypeptides. 3,843,447, Cl. 195-68.000.

Burlow, Stanley N., to Velsicol Chemical Corporation. Rodenticidal compositions and processes employing gelatinized amylaceous materials. 3,843,783, Cl. 424-84.000.

Burnel, Daniel: *See—*
Mourot, Michel; Dodinot, Bernard; Burnel, Daniel; Freschard, Regis; and Fontenier, Guy, 3,842,843.

Burnsweig, Joseph, to Hughes Aircraft Company. Time delay controller circuit for reducing time jitter between signal groups. 3,843,930, Cl. 328-155.000.

Burroughs Corporation: *See—*
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Burroughs Wellcome Co.: *See—*
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Bussma, Vaughn R.: *See—*
Roselle, Pierce C.; Evans, David G.; and Bussma, Vaughn R., 3,843,877.

Bustard, Thomas Stratton, to Nuclear Battery Corporation, mesne. Process for treating thermopile. 3,842,489, Cl. 29-575.000.

Buzas, Andre; and Bruneau, Jacques, 1/2 to Les Laboratories Bruneau & Cie, mesne. Derivatives of pehnoxyacetic acids. 3,843,647, Cl. 260-247.20a.

Bychurch, Antoine S., Sr. Reversible kelly system for rotary drilling. 3,842,619, Cl. 64-23.500.

C & C Research, Inc.: *See—*
Cole, Melrose R., 3,843,255.

Calcagno, Benedetto; and Colombo, Paolo, to Societa' Italiana Resine S.I.R.S.p.A. Process for polymerizing olefins. 3,843,619, Cl. 260-94.90c.

Calhoun, Charles W.: *See—*
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Calusen, Edward Einar: *See—*
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Cama, Lovji D.: *See—*
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Campbell, Henry Fred, to Campbell Research Corporation. Industrial building construction. 3,842,560, Cl. 52-468.000.

Campbell, John B., to Du Pont de Nemours, E. I., and Company. Branched-chain hydrocarbon elastomers. 3,843,613, Cl. 260-78.5bb.

Campbell, John Scott; Fairchild, John L.; Lafond, Robert L.; and Kilker, Carl R., to Faxon Communications Corporation. Graphic indicia video signal acquisition transmission and reproduction system. 3,843,839, Cl. 178-6.000.

Campbell Research Corporation: *See—*
Campbell, Henry Fred, 3,842,560.

Campbell, Robert W., to Phillips Petroleum Company. Copolyamide from terephthalic acid, dodecandioic acid and dodecane diamine. 3,843,611, Cl. 260-78.00r.

Campbell, Roger G.; Goff, Richard E., Jr.; and Guay, Normand D., to Johnson & Johnson. Narrow elastic waistband. 3,842,437, Cl. 2-237.000.

Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Guay, Normand D., to Johnson & Johnson. Narrow elastic fabric. 3,842,438, Cl. 2-237.000.

Campbell, Trevor G., to Caterpillar Tractor Company. Cylindrical bearing assembly. 3,843,216, Cl. 308-36.100.

Canon Kabushiki Kaisha: *See—*
Harada, Yuji; and Yoshizawa, Akihiko, 3,843,851.
Katayama, Hirohiko; Hanada, Hiroshi; and Kasai, Masanao, 3,843,394.
Takigawa, Tomoshi; and Toyama, Masamichi, 3,843,243.

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Caravans International (motorised) Limited: *See—*
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Carbonnel, Pierre Andre: *See—*
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Carborundum Company, The: *See—*
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Cardiff, George H., to Metal Fab Inc. Combination insulated flue and thermosyphon chimney. 3,842,721, Cl. 98-60.000.

Carding Specialists Co., Limited: *See—*
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Carlson, Robert T.; and Barr, Ralph E., Jr., to Detection Sciences, Inc. Digital speed control system. 3,843,914, Cl. 318-327.000.

Carr, George W., to Pullman Incorporated. Freight bracing and loading apparatus. 3,842,755, Cl. 105-480.000.

Carrier Corporation: *See—*
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Carroll, Ronald L., to Texas Instruments, Incorporated. Bismuth masking technique for use on injection laser diodes as means of uniformity evaluation and spontaneous control and product. 3,843,401, Cl. 117-227.000.

Carter, Ned C.: *See—*
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Cartwright, William Francis, to Celanese Corporation. Tobacco replacement material. 3,842,845, Cl. 131-2.000.

Cartwright, William J.: *See—*
Aschberger, Anton A.; Avery, Jack L.; Cartwright, William J.; Dean, Geoffrey J.; Tysver, Oliver J.; Wolfe, Robert W.; and Bautz, Frederick H., 3,842,631.

Cassel, Klaus, to Werkzeug-Union GmbH. Wire-cutting tool provided with holding member. 3,842,500, Cl. 30-124.000.

Cassia, Antonio Macchi, to Steiner American Corporation. Towel dispenser. 3,843,219, Cl. 312-38.000.

Cassibo, Vernon E.: *See—*
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Cast Metal Industries, Inc.: *See—*
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Cataldo, Roy S., to General Motors Corporation. Regenerative steam ignition internal combustion engine. 3,842,808, Cl. 123-25.00p.

Catellono, Michele: *See—*
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Cartwright, William Francis, 3,842,845.

Cellu Products Company: *See—*
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Central Soya Company, Inc.: *See—*
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Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*
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Certain-Teed Products Corporation, mesne: *See—*
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Ceskoslovenska Akademie ved.: *See—*
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Cetola, Henry A.: *See—*
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Chafetz, Harry: *See—*
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Champagne, Ralph R., to Rockwell International Corporation. Tapeguide raceway for rapier loom. 3,842,869, Cl. 139-188.000.

Chang, Henry M., to First Dynamics, Inc. Combination food container and eating utensil. 3,842,975, Cl. 206-72.000.

Chang, Yi-Chung, to Berry Metal Company. Apparatus and method for contacting molten metal with gas. 3,843,105, Cl. 266-34.001.

Chang, Yi-Han; McLamore, William M.; and Tretter, James R., to Pfizer Inc. Dibenzodepin therapeutic agent. 3,843,790, Cl. 424-250.000.

Chaplow, Richard A.; and Hodgman, Ronald A., to General Foods, Limited. Method of removing undesirable solids from coffee extract. 3,843,822, Cl. 426-384.000.

Chapman, A. W., Limited: *See—*
Adams, Albert John, 3,843,087.

Chase, Harold E.; and Woods, Charles R. Disposable refrigerated container and refillable refrigerant supply vessel. 3,842,017, Cl. 62-294.000.

Chase-Shawmut Company, The: *See—*
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Chekotilo, Leonty Vasilievich: *See—*
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Chenkovich, Gary A.: *See—*
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Brown, Melancthon S., 3,843,792.
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Cleveland, James D., 3,843,688.
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Schoerner, Roger J.; and Chia, Enrique C., 3,843,358.

Chiba, Hiroyuki; Hirota, Eiichi; and Nakamura, Shoji, to Matsushita Electric Industrial Co., Ltd. Multichannel magnetic ferrite head and a method for making the same. 3,842,494, Cl. 29-603.000.

Chiba, Hiroyuki; Tawara, Yoshio; and Hirota, Eiichi, to Matsushita Electric Industrial Co., Ltd. Magnetic head core of large grain size and low porosity. 3,843,541, Cl. 252-62.570.

Chicago Fire Brick Company: *See—*
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Childers, Thomas W.: *See—*
Morrill, Charles D.; Herd, David P.; and Childers, Thomas W., 3,843,168.

Chong, Victor M., to Sun Ventures Inc. Adiabatic recycle design for exothermic heterogeneously catalyzed reactions. 3,843,737, Cl. 260-668.00f.

Chremos, George N.; and Barone, Bruno J., to Petro-Tex Chemical Corporation. Catalytic epoxidation of olefins. 3,843,694, Cl. 260-348.50l.

Christensen, Bernard J.; and Chenoweth, Harry H., to Hill, Ingman Chase & Co. Fish-rearing facility. 3,842,804, Cl. 119-3.000.

Christensen, Burton G.; and Cama, Lovji D., to Merck & Co., Inc. Process for preparing penicillin and cephalosporin compounds. 3,843,641, Cl. 260-243.00c.

Christie, Alma Aranshew; Elsworth, Raymond; Herbert, Denis; and Sargesnt, Kenneth, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Social Services in Her Britannic Majesty's Government of the. Asparaginase production. 3,843,45, Cl. 195-55.00a.

Christie Electric Corporation: *See—*
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Christman, Harold F.; and Teel, Paul H., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation process catalyzed by magnesium ferrite. 3,843,745, Cl. 260-680.00e.

Chu, Shih-Lin: *See—*
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Church, Nathan L.: *See—*
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Church, Nathan Lewis: *See—*
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Ciba Limited: *See—*
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Ciba-Geigy AG: *See—*
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Desai, Nalin Binduprasad; Yayaraman, Onnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,843,625.
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Seiler, Herbert; and Dussy, Paul, 3,843,624.
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Ciba-Geigy Corporation: *See—*
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Gatzi, Karl, 3,843,724.
Habicht, Ernst; Libis, Bernard; and Zergenyi, Janos, 3,843,797.
Moser, Hans; and Vogel, Christain, 3,843,670.
Porret, Daniel, 3,843,674.
Porret, Daniel; and Stockinger, Friedrich, 3,843,675.
Seltzer, Raymond; and Gordon, David A., 3,843,649.

Cicci, George B.; and Scarnato, Thomas J., to International Harvester Company. Adjustable stone shoe for crop harvester cutter bar. 3,842,575, Cl. 56-307.000.

Cinacor, Ltd.: *See—*
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Cisney, Merle E.: *See—*
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Cities Service Company: *See—*
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Cities Service Oil Company: *See—*
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Citizen Watch Company Limited: *See—*
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Clark, Albert L. Aerial platform. 3,842,933, Cl. 182-2.000.
Clark, Edward S. Leveling instrument. 3,842,513, Cl. 33-367.000.
Clark Equipment Company: *See—*
Frank, Gary D., 3,843,003.
Clark, Frank S., to Monsanto Company. Polyphenyl thioether lubricating compositions. 3,843,532, Cl. 252-46.700.
Clark, James A., to Bausch & Lomb Incorporated. Container closure. 3,842,790, Cl. 215-228.000.
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., to Caterpillar Tractor Company. Method of making a track idler wheel. 3,842,475, Cl. 29-159.00r.
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Cleveland, James D., to Chevron Research Company. 5-Chlorothioimino imidazolidines. 3,843,677, Cl. 260-309.500.
Cleveland, James D., to Chevron Research Company. N-chlorothio-7-(2,3-dihydrobenzofuranyl) carbamate production. 3,843,688, Cl. 260-346.20r.
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Nash, Harold Llewellyn; Edwards, John; and Jones, Charles Morgan, 3,843,199.
Cobb, David A., to International Harvester Company. Sheet metal compression ring. 3,843,138, Cl. 277-22.000.
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Colburn, James R., to General Tire & Rubber Company, The. Reclamation of fabric supported thermo-plastic sheet scrap. 3,843,060, Cl. 241-24.000.
Cole, Melrose R., to C & C Research, Inc. Film speed enhancement camera. 3,843,255, Cl. 355-68.000.
Colella, Alfred S., 10% to Baisch, J. Carroll. Safety closures for containers. 3,843,008, Cl. 215-215.000.
Coleman, Martin W., to Allis-Chalmers Corporation. Combine hydraulic valve. 3,842,714, Cl. 91-459.000.
Coleman, Steven J.: *See—*
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Colgate-Palmolive Company: *See—*
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Hewitt, Gordon Trent; and Furgal, Henry Paul, 3,842,847.
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Coll-Palagos, Miguel, to Stauffer Chemical Company. Embossing rollers and method of embossing. 3,843,763, Cl. 264-219.000.
Colombo, Paolo: *See—*
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Combe Incorporated: *See—*
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Bevilacqua, Frank; Dietrich, Joseph R.; Groves, Malcolm D.; and Flinn, William S., 3,843,471.
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Cominco, Ltd.: *See—*
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Compagnie Francais de Raffinage: *See—*
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Cone, Eugene J., to PPG Industries, Inc. Method and apparatus for producing glass beads. 3,843,340, Cl. 65-21.000.
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Connelly, David M.; and Villani, Victor, to Connelly, David M., M.D., mesne and Villani, Victor. Method of replacing hair. 3,842,439, Cl. 3-1.000.
Connelly, David M., M.D., mesne: *See—*
Connelly, David M.; and Villani, Victor, 3,842,439.
Conner, Algie J.; Dudych, Daniel; and Vermilion, Willas L., to Universal Oil Products Company. Regeneration apparatus. 3,843,330, Cl. 23-288.00b.
Conner, William R., Jr., to Stahl-Urban Company. Drive for programmable sewing apparatus. 3,842,766, Cl. 112-121.120.
Consortium fur Elektrochemsche Industrie GmbH: *See—*
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Contemporary, Inc.: *See—*
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Continental Can Company, Inc.: *See—*
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Conway, Joseph C., Jr., to United States of America, Navy. Theta-shaped test specimen for composite materials. 3,842,664, Cl. 73-88.00r.
Cook, Elton S.; and Fujii, Akra, to Stanley Drug Products, Inc. Methods and compositions for inducing resistance to bacterial infections. 3,843,798, Cl. 424-319.000.
Cook, William R., Jr. Transmission bands. 3,842,952, Cl. 188-249.000.
Coombs, Robert V.; and Houlihan, William J., to Sandoz-Wander, Inc. Substituted naphtho pyrazoles. 3,843,664, Cl. 260-296.00t.
Coombs, Robert V.; and Houlihan, William J., to Sandoz-Wander, Inc. Process for preparing substituted indeno, naphtho and cyclopepta pyrazoles. 3,843,665, Cl. 260-296.00t.
Coombs, Robert V.; and Houlihan, William J., to Sandoz-Wander, Inc. Process for preparing substituted indeno, naphtho and cycloheptа pyrazoles. 3,843,666, Cl. 260-296.00t.
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Copolymer Rubber & Chemical Corporation: *See—*
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Boone, Jimmie H.; Chenkovich, Gary A.; Corcoran, Brian F.; Marley, Arley C., III; and Simpson, Robert D., 3,843,077.
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Cosco, Inc.: *See—*
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Cospen, Jean; and Schiavi, Jean, to Pechiney Ugine Kuhlmann. Container cover. 3,843,014, Cl. 220-66.000.
Couper, Neale S., to Glacier Metal Company, Limited, The. Bearings. 3,842,473, Cl. 29-149.50c.
Courtaulds Limited: *See—*
Flavell, John; Jeffcoat, Keith; and Betts, Max William, 3,842,623.
Cowan, Philip L., to Electrogasdynamics, Inc. Pneumatically assisted hydraulic spray coating apparatus. 3,843,052, Cl. 239-3.000.
Cowell, Timothy Anton Turton; and Brown, Dennis Cockburn, to Associated Engineering Limited. Ignition devices. 3,842,818, Cl. 123-169.0mg.
Cox, Arthur R.; Holiday, Paul R.; Lewis, Gary K.; and Soderquist, Seven D., to United Aircraft Corporation. Wrought nickel-base alloy and products thereof. 3,843,421, Cl. 148-32.000.
Cox, Russell G., to Magnetic Controls Company. Telephone looptest system. 3,843,848, Cl. 179-175.30r.
Craddock, Michael John, to Geecen Limited. Taximeters. 3,843,869, Cl. 235-30.00r.
Craddock, Michael John, to Geecen Limited. Taximeters. 3,843,870, Cl. 235-30.00r.
Cramer, William H. Method and apparatus for mounting a sleeve on a combined ferrule and electrical conductor. 3,842,483, Cl. 29-450.000.
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Crespi, Carlo. Device for raising weights in precision balances. 3,842,925, Cl. 177-248.000.
Cristelli, Joseph. Compartmental adapters for golf bags. 3,842,876, Cl. 150-1.50r.
Cromwell, John E., to Koppers Company, Inc. Flame-sprayable composition of nickel coated molybdenum. 3,843,334, Cl. 29-191.200.
Cronin, Edward W.: *See—*
Ehrenfreund, Herbert A.; and Cronin, Edward W., 3,843,757.
Cronsweet, Tom N., to Acuity Systems, Incorporated. Method and means for relaxing the accommodation of the eye. 3,843,240, Cl. 351-2.000.
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Crosfield Business Machines Limited: *See—*
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Crossley, Ian Alexander; Kirk, Geoffrey Eric; Anthony, Norman Howell; and Bamber, Derek Robert, to Rolls-Royce (1971) Limited and University of Technology, The. Stator assembly for gas turbine engines which accommodates circumferential and axial expansion f engine components. 3,843,279, Cl. 415-191.000.

Crown Zellerbach Corporation: *See*—
Herschler, Robert J.; and Cisney, Merle E., 3,843,347.
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Crownover, Joseph W.: *See*—
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Crumbach, Richard: *See*—
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Csejka, David A.: *See*—
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Cullen, William P.; Chafetz, Harry; and Hellmut, Walter W., to Texaco Inc. Lubricant composition containing sulfurized and chlorinated alkylene polyamine reaction product. 3,843,533, Cl. 252-47.500.

Cunningham, Ronald J. Induction heating system primarily intended for cooking use. 3,843,857, Cl. 219-10.490.

Cupery, Martin E. N-imidazole compounds and their complex metal derivatives. 3,843,667, Cl. 260-299.000.

Cuprinol Limited: *See*—
Hilditch, Edward Austin; and Nightingale, Charles Arnold, 3,842,796.

Currency Systems, Inc.: *See*—
Price, Robert K., 3,842,573.

Currie, Grover C., Jr.: *See*—
Doll, Gregory W.; and Currie, Grover C., Jr., 3,843,485.

Cuttica, Luigi. Interconnection of two craft. 3,842,782, Cl. 114-235.00r.

Cyphelly, Ivan Jaroslav. Hydrostatic flow-amplifier. 3,842,855, Cl. 137-85.000.

Cytec Development Inc.: *See*—
Reilly, Richard J.; and Merrill, Glen L., 3,842,956.

Czernik, Daniel E.; and Neff, Clarence H., to Felt Products Mfg. Co. Locator assembly for mounting members for roadway gap bridging and sealing devices. 3,843,273, Cl. 404-72.000.

Daiga, Valdis R., to Owens-Illinois, Inc. Gold powder. 3,843,379, Cl. 106-290.000.

Daigle, John P., to Larsem, Veggo F., Co., The. Interlocking precast concrete slabs. 3,842,562, Cl. 52-583.000.

Daily, Glenn A.: *See*—
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Daimler-Benz Aktiengesellschaft: *See*—
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Dainippon Pharmaceutical Co., Ltd.: *See*—
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Daley, Lawrence R.: *See*—
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Dana Corporation: *See*—
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Shea, Dennis W., 3,842,691.

Danfoss A/S: *See*—
Iversen, Poul Christian Carlos, 3,842,669.

Danielson, John H. Anti-holddown device with diaphragm actuating switch and piston. 3,843,855, Cl. 200-83.00j.

Danzik, Mitchell; and House, Ralph, to Chevron Research Company. Phosphate-free carboxylate-sulfate detergents. 3,843,707, Cl. 260-458.000.

Dart Industries, Inc.: *See*—
Novice, Michael A.; and Heller, Arthur D., 3,842,793.

Datamation Communications, Inc.: *See*—
Mayne, David R., 3,843,042.

Davies, James Francis; Gauterin, Charles Rowland; and Neillie, William Frederick Soutar, to Lever Brothers Company. Detergent compositions. 3,843,563, Cl. 252-547.000.

Davies, John R., to Oliver Machinery Company. Labeling machine. 3,843,440, Cl. 156-354.000.

Davis, Billy W. Inflatable target and foldable scoring apparatus. 3,843,124, Cl. 273-95.00b.

Davis, Richard A. Rotatable distributor-feeders to traveling receptacles. 3,842,967, Cl. 198-140.000.

Davis, Richard P. Exercising machine. 3,843,119, Cl. 272-79.00r.

Day, Donald Earl, to Eastman Kodak Company. Spindle control mechanism. 3,843,073, Cl. 242-204.000.

Dayton Progress Corporation: *See*—
Stevens, Harry G.; and Smith, Robert E., 3,842,645.

Dayton-Walther Corporation: *See*—
Walther, William D.; and De Regnaucourt, Robert A., 3,843,200.

De Baun, Kenneth W.; and Noll, Robert W., to Air Monitor Corporation. Isokinetic sampling system. 3,842,678, Cl. 73-421.50a.

De Cat, Arthur Henri: *See*—
Van Poucke, Raphael Karel; De Cat, Arthur Henri; and Benoy, Gaston Jacob, 3,843,365.
Van Poucke, Raphael Karel; Benoy, Gaston Jacob; and De Cat, Arthur Henri, 3,843,366.

De Diemar, Ronald B.: *See*—
Allen, Frank M.; De Diemar, Ronald B.; and Ehlert, Kenneth C., 3,843,068.

De La Vega, Mario Castro. Supporting structure for disposable tissue dispenser. 3,843,085, Cl. 248-311.000.

De Luca, Paul V., to Porta Systems Corporation. Compartmentalized accessory tray assembly for ladders. 3,842,936, Cl. 182-129.000.

de Montigny, Armand; and Buchner, Werner, to Bayer Aktiengesellschaft. Process for the manufacture of tris-(trimethylsiloxy)-phenylsilane. 3,843,702, Cl. 260-448.20e.

De Regnaucourt, Robert A.: *See*—
Walther, William D.; and De Regnaucourt, Robert A., 3,843,200.

De Vita, Raymond A.; Dorosz, Adolph S.; and Szydlek, Nicholas P., to USM Corporation. Thread use monitor. 3,843,883, Cl. 250-233.000.

de Vries, Douwe; and Calhoun, Charles W., to Stewart, Jim C., & Stevenson, Inc. Well pipe joint locator using a ring magnet and two sets of hall detectors surrounding the pipe. 3,843,923, Cl. 324-34.00r.

Dea, Joseph W. Carrier. 3,842,976, Cl. 206-203.000.

Dean, Geoffrey J.: *See*—
Aschberger, Anton A.; Avery, Jack L.; Cartwright, William J.; Dean, Geoffrey J.; Tysver, Oliver J.; Wolfe, Robert W.; and Bautz, Frederick H., 3,842,631.

Deau, William J., to Contemporary, Inc. Picture frame and plaque. 3,842,525, Cl. 40-159.000.

DeBrey, Robert J. Particle flow monitor. 3,842,791, Cl. 116-67.00r.

Declaye, Joseph: *See*—
Jose, Jean; Declaye, Joseph; Albert, Roger; and Bodart, Marcel, 3,843,264.

Deere & Company: *See*—
Hook, Richard Wayne, 3,842,971.

Deering Milliken Research Corporation: *See*—
Short, Joe T., 3,842,767.
Wethington, Charles A., 3,843,432.

Del-Met Corporation: *See*—
Buerger, Herbert, 3,843,201.

Delahanty, John: *See*—
Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., 3,843,894.

Demanet, Robert A. Serial housing units construction process. 3,842,566, Cl. 52-747.000.

Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., to American Home Products Corporation. 1-Carboxamido pyrano (thiopyrano) [3,4-b] indole derivatives. 3,843,681, Cl. 260-326.14r.

Deniega, Jose Castillo; and Tellerman, Edward M., to Wesco Industries Corporation, mesne. Yarn feeding and storage device for textile producing machine. 3,843,069, Cl. 242-47.120.

Denis, Jacques; and Parc, Guy, to Institut Francois du Petrole, des Carburants et Lubrifiants. Lubricating compositions. 3,843,535, Cl. 252-57.000.

Denki Onkyo Co., Ltd.: *See*—
Katayama, Shitomi; Horikawa, Hideichi; and Masuda, Noboru, 3,843,752.

Depuy, Arthur H.; Johnson, Leonard F.; and Scheinberg, Stanley, to International Business Machines Corporation. Manufacture of assorted types of LSI devices on same wafer. 3,842,491, Cl. 29-580.000.

Dera, Alain; and Besseau, Daniel, to Regie Nationale des Usines Renault and Automobiles Peugeot. Energy absorbing bumper. 3,843,181, Cl. 293-86.000.

Dermott, Raymond W., to Schlumberger Technology Corporation. Apparatus for venting gases from an enclosed perforating carrier. 3,842,919, Cl. 175-4.540.

Desai, Nalin Binduprasad; Yayaraman, Onnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, to Ciba-Geigy AG. Pyrazole azo dyestuffs fontaining a sulfonylurea or sulfonylurethane substituent. 3,843,625, Cl. 260-163.000.

DeSteese, John G.: *See*—
Rason, Ned S.; DeSteese, John G.; and Gasper, Kenneth A., 3,843,896.

Detection Sciences, Inc.: *See*—
Carlson, Robert T.; and Barr, Ralph E., Jr., 3,843,914.

Deumens, Johannes J. M.: *See*—
Groen, Siemen H.; Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., 3,843,659.

Deutsch, Jean-Claude: *See*—
Borel, Joseph; Deutsch, Jean-Claude; Labrunie, Guy; and Robert, Jacques, 3,843,231.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Friedrich, Heinz; and Neugebauer, Walter, 3,843,562.

Di Fulvio, Anthony P.; and Russell, Matthew J., to Eastman Kodak Company. Elevator apparatus. 3,843,115, Cl. 271-147.000.

Di Maio, Anthony E., to Marson Corporation. Rivet setting tool for blind rivets. 3,842,649, Cl. 72-391.000.

Diamond, Julius; Joslin, Robert S.; and Buehler, John D., to Rorer, William H., Inc. Antacids. 3,843,778, Cl. 424-8.000.

Dian, Walter: *See*—
Golden, Gerald; Wrobel, Charles V., Jr.; and Dian, Walter, 3,843,433.
Golden, Gerald; Wrobel, Charles V., Jr.; and Dian, Walter, 3,843,474.

DiBattista, John D., to United States of America, National Aeronautics and Space Administration. Determining particle density using known material Hugeniot curves. 3,842,656, Cl. 73-32.00r.

DiBella, Eugene P., to Tenneco Chemicals, Inc. Process for the production of substituted indazoles. 3,843,678, Cl. 260-310.00c.

Dickey, John J., to Aluminum Company of America. Method for applying a container closure. 3,842,574, Cl. 53-42.000.

Dietrich, Joseph R.: *See*—

Bevilacqua, Frank; Dietrich, Joseph R.; Groves, Malcolm D.; and Flinn, William S., 3,843,471.

Dietrich, Wilson G. Board game with gravity projector and projectile therefor. 3,843,129, Cl. 273-120.00r.

DiFazio, James Joseph; Giuffre, George Joseph; and Karsch, Arthur Frederick, to International Business Machines Corporation. Latent image mask repair. 3,843,362, Cl. 96-38.300.

Dijkstra, Rinse, to U.S. Philips Corporation. Method of producing an aqueous emulsion of a phenol formaldehyde resol resin suitable for impregnating fibrous material. 3,843,575, Cl. 260-29.300.

Dill, Herbert C.; and Scales, Stanley R., to Hughes Tool Company. Boronized drill bit cutters. 3,842,921, Cl. 175-374.000.

Dimension Weld International Corporation: *See*—
Robinson, Jerrold, 3,843,437.

Diring, James A.: *See*—
Krueger, Archie S.; Slye, Norman J.; and Diring, James A., 3,843,218.

Ditzen, Edward C., to Rucker Company, The. Crane load compensator. 3,842,603, Cl. 60-416.000.

Dix, James S.: *See*—
Mathis, Ronald D.; and Dix, James S., 3,843,595.

Dixon, Andrew L., Jr.: *See*—
McKinney, Robert W.; Dixon, Andrew L., Jr.; and Jordan, Raymond L., 3,843,517.

Dixon, William G. Safety warning system for firearms. 3,842,526, Cl. 42-1.00a.

Dmitriev, Andrei Vladimirovich: *See*—
Presnetsov, Gennady Nikolaevich; and Dmitriev, Andrei Vladimirovich, 3,843,882.

Dobo, Emerick J., to Monsanto Company. Method for producing composite metal wire. 3,842,896, Cl. 164-86.000.

Dobrzhansky, Georgy Fedorovich; Chestmir, Barta; Belyaev, Leonid Mikhailovich; Silvestrova, Iraida Mikhailovna; and Pisarevsky, Jury Vladimirovich. Acoustic optical element utilizing univalent mercury halogenide crystals. 3,843,234, Cl. 350-161.000.

Dobson, Thomas A.: *See*—
Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., 3,843,681.

Dockner, Toni: *See*—
Spaenig, Hermann; Dockner, Toni; and Frank, Anton, 3,843,676.

Dodinot, Bernard: *See*—
Mourot, Michel; Dodinot, Bernard; Burnel, Daniel; Freschard, Regis; and Fontenier, Guy, 3,842,843.

Doelcher, Harold S. Table tennis paddle and ball rack. 3,842,979, Cl. 211-14.000.

Doherty, Thomas E.: *See*—
Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., 3,843,316.

Doll, Gregory W.; and Currie, Grover C., Jr., to Cellu Products Company. Method of forming a stretchable tubular packaging material. 3,843,485, Cl. 156-251.000.

Dolza, Claudio. Articulated jib for crawler tractors and the like. 3,842,983, Cl. 212-8.00r.

Dominion Bridge Company Limited: *See*—
Schwartz, Walter, 3,842,648.

Doner, Arthur J.: *See*—
Sargent, Edward A.; and Doner, Arthur J., 3,842,762.

Donnelly Mirrors, Inc.: *See*—
Kurz, Arthur W., Jr., 3,843,236.

Dooley, James Edward, to Dooley, T., & Co. Limited. Sheet squaring apparatus. 3,842,995, Cl. 214-65.000.

Dooley, T., & Co. Limited: *See*—
Dooley, James Edward, 3,842,995.

Doorakian, George A., to Dow Chemical Company, The. Aromatic polysulfide polymer. 3,843,614, Cl. 260-79.000.

Doorakian, Goerge A.: *See*—
Schmidt, Dennis L.; and Doorakian, Goerge A., 3,843,605.

Dorion, Francis W., Jr.; Douglass, Paul W.; Nissen, Warren I.; and Perry, Roger L., to Gillette Company, The. Razor blade assembly. 3,842,499, Cl. 30-50.000.

Dorosz, Adolph S.: *See*—
De Vita, Raymond A.; Dorosz, Adolph S.; and Szydlek, Nicholas P., 3,843,883.

Dostalik, Nancy L.: *See*—
Dostalik, William W., 3,843,431.

Dostalik, William W., to Dostalik, Nancy L. Process for making fibrous composition board. 3,843,431, Cl. 156-62.200.

Doughty, Robert L.; and Wheeler, Clayton A., to Monsanto Company. Double parison die head control mechanism. 3,843,305, Cl. 425-465.000.

Douglass, Paul W.: *See*—
Dorion, Francis W., Jr.; Douglass, Paul W.; Nissen, Warren I.; and Perry, Roger L., 3,842,499.

Dow Chemical Company, The: *See*—
Doorakian, George A., 3,843,614.
Frevel, Ludo K.; and Kressley, Leonard J., 3,843,722.
Gibbs, Dale S.; and Wessling, Ritchie A., 3,843,581.
Gibbs, Dale S.; and Wessling, Ritchie A., 3,843,582.
Gibbs, Dale S.; and Wessling, Ritchie A., 3,843,583.
Kangas, Donald; and Neuendorf, W. Robert, 3,843,585.
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Kurihara, Norman H.; and Bublitz, Donald E., 3,843,644.
Merrill, Claude I., 3,843,770.
Pews, R. Garth; and Gunsher, Jeffery A., 3,843,650.
Reding, John N., 3,843,355.
Schmidt, Dennis L.; and Doorakian, Goerge A., 3,843,605.
Woodland, Paul C.; and Moldovan, Daniel, 3,843,568.
York, Buddy L.; and Terada, Kazuji, 3,843,774.
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Dow Corning Corporation: *See*—
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Dow Corning Limited: *See*—
Farminer, Kenneth Wilfrid; and Brooke, Christopher Miles, 3,843,558.

Doyle, Charles D.: *See*—
Reigel, Stanley A.; and Doyle, Charles D., 3,842,615.

Drab, Edward H., to Uniroyal, Inc. Apparatus for molding rubber. 3,843,291, Cl. 425-215.000.

Dreher, Donald F. Dry dry transfer. 3,843,480, Cl. 161-167.000.

Drelich, Arthur H., to Johnson & Johnson. Methods of recovering waste fibers. 3,843,321, Cl. 8-141.000.

Dresen, Stanley F.; and Anderson, Reuben E., to Dresen, Stanley F.; d/b/a SFD Oil Filters. Oil filter. 3,843,523, Cl. 210-440.000.

Dresen, Stanley F.; d/b/a SFD Oil Filters: *See*—
Dresen, Stanley F.; and Anderson, Reuben E., 3,843,523.

Dresser Industries, Inc.: *See*—
Wolk, Piero, 3,842,918.

Dressler, Bruno, to Regie Nationale des Usines Renault. Floating-nut mounting. 3,842,686, Cl. 74-424.80a.

Driggs, Leslie W., to Nurtionics Machine Corporation. Method and apparatus for treating eggs. 3,843,813, Cl. 426-241.000.

Drueck, Fred, Jr., to National Creative Merchandising Corp. Display device. 3,842,524, Cl. 40-145.000.

Drust AG: *See*—
Pramstraller, Wilmuth; and Stampfer, Hansjorg, 3,843,254.

Du Pont de Nemours, E. I., and Company: *See*—
Aldridge, Gerald Richard, 3,843,653.
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Aykan, Kamran; Rogers, Donald B.; and Sleight, Arthur W., 3,843,554.
Campbell, John B., 3,843,613.
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Faust, Carl Raymond; and Yates, Paul Clifford, 3,843,767.
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Shell, Theodore; and Vasta, Joseph A., 3,843,593.
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Dubell, Edward G.: *See*—
Panek, George J.; and Dubell, Edward G., 3,843,853.

Dubois, Gerald; and Berthoud, Francois, to Ebauches S.A. Chronograph timepiece. 3,842,591, Cl. 58-77.000.

Dubuit, Louis Gilbert. Two-colour printing machines using the silk-screen process. 3,842,733, Cl. 101-38.00a.

Dudych, Daniel: *See*—
Conner, Algie J.; Dudych, Daniel; and Vermilion, Willas L., 3,843,330.

Duennenberger, Max: *See*—
Leuthi, Christian; Biland, Hans Rudolf; and Duennenberger, Max, 3,843,716.

Duer, Morris J. Thread locking means. 3,842,878, Cl. 151-21.00c.

Duff, Peter James; and Toomey, Denis, to Caravans International (motorised) Limited. Vehicle assembly kits. 3,843,189, Cl. 296-1.00r.

Duling, Irl N.; and Gates, David S., to Sun Oil Company of Pennsylvania. Blended traction fluid containing cyclic compounds. 3,843,537, Cl. 252-59.000.

Dunan, George V. R.: *See*—
Stiles, Wade; and Dunan, George V. R., 3,842,606.

Duncan, Robert J., to USM Corporation. Instantaneous rationing means. 3,843,099, Cl. 259-23.000.

Dunlop Company Limited, The: *See*—
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Dunlop Holdings Limited: *See*—
Mills, Anthony Mark; Wortley, William; and Barton, John, 3,842,879.

Dunlop Limited: *See*—
Portas, Donald; and Aubury, John F. B., 3,843,210.

Dunn, James H., to Ethyl Corporation. Catalytic compounds. 3,843,698, Cl. 260-429.00r.

Dunnenberger, Max: *See*—
Piller, Bernhard; Meier, Max; Dunnenberger, Max; Biland, Hans Rudolf; and Luthi, Christian, 3,843,371.

Duquette, William L. Air supported metal roof and method of raising and lowering. 3,842,550, Cl. 52-2.000.

Dussy, Paul: *See*—
Seiler, Herbert; and Dussy, Paul, 3,843,624.

Dutton, David: *See*—
Large, John; Moss, James; and Dutton, David, 3,842,643.

Dvorok, Edmund: *See*—
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Dygos, John H., to Searle, G. D., & Co. 3-Oxo-2-azabicycl [2.2.2] octan-6-oxo yl-5(4-biphenyl-3-methylvalerate and congeners. 3,843,660, Cl. 260-293.540.

Eames, Wilmer B. Pre-formed dental matrix band. 3,842,505, Cl. 32-63.000.

Eanzel, Albert Robert, to Du Pont de Nemours, E. I., and Company. Water in oil fluoropolymer emulsion containing hydrocarbon or halogenated hydrocarbon solvent. 3,843,579, Cl. 260-29.60f.

Easterday, David E., to Hallmark Cards, Inc. Pigmented sealing wax candle. 3,843,312, Cl. 431-288.000.

Eastern Company, The: *See—*
Wilbur, Robert L.; and Stickney, Arthur C., 3,842,674.

Eastman Kodak Company: *See—*
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Eastwood, Keith: *See—*
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Ebauches S.A.: *See—*
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Ebine, Tohsiyuki: *See—*
Ohuchi, Yasushi; Ebine, Tohsiyuki; Ohwada, Takefumi; and Tomozaki, Ryozo, 3,842,493.

Eckert, Konrad, to Bosch, Robert, GmbH. Fuel injection apparatus for externally ignited internal combustion engines operating on continuously injected fuel. 3,842,813, Cl. 123-119.00r.

Eddy, Richard P., to Christie Electric Corporation. Cooling system for xenon arc lamps. 3,843,879, Cl. 240-47.000.

Edelman, Gerald M.; Wang, John L.; Rutishauser, Urs S.; and Millette, Clarke F., to Research Corporation. Method of cell fractionation and apparatus therefor. 3,843,324, Cl. 23-230.00b.

Eder, Ulrich: *See—*
Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Hans-Detlef, Berndt, 3,843,631.

Edge, Charles K.; and Kunkle, Gerald E., to PPG Industries, Inc. Manufacture of sheet glass by contiguous float process. 3,843,346, Cl. 65-65.00a.

Edlefsen, Thomas B. Racket with replaceable string frame. 3,843,121, Cl. 273-73.001.

Edmonds, Walter R. Real time holographic system. 3,843,260, Cl. 356-109.000.

Edwards, Ivor Lloyd, to British Petroleum Company Limited, The. Molecular sieve process. 3,843,514, Cl. 208-310.000.

Edwards, John: *See—*
Nash, Harold Llewellyn; Edwards, John; and Jones, Charles Morgan, 3,843,199.

Edwards, Norman W.; Petro, Michael; Guilhem, Jacques; and Pierre, Jean, to Pittsburgh-Des Moines Steel Company. Tank for storing fluids on a ship or the like and tie down means therefor. 3,842,775, Cl. 114-74.00r.

Edwards, Richard R.: *See—*
Hopkins, Walker L.; and Edwards, Richard R., 3,843,327.

Efthymiou, Constantine John. Preparation of feta cheese. 3,843,801, Cl. 426-36.000.

Egli, Bruno; and Manser, Niklaus, to Labronic, AG. Photometer for digital indication of concentration. 3,843,265, Cl. 356-201.000.

Egyesult Izzolampaes Villamossagi Reszenytarsasag: *See—*
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Ehlen, Jack William, to McCulloch Corporation. Exhaust system for a two-cycle engine. 3,842,599, Cl. 60-273.000.

Ehlert, Kenneth C.: *See—*
Allen, Frank M.; De Diemar, Ronald B.; and Ehlert, Kenneth C., 3,843,068.

Ehrenfreund, Herbert A.; and Cronin, Edward W., to Haskon, Inc., mesne. Process for extruding foamed thermoplastic by utilizing an intermeshing co-rotating twin screw extruder. 3,843,757, Cl. 264-53.000.

Ehrich, Frederick Franklin, to General Electric Company. Gas turbine engine with means for reducing the formation and emission of nitrogen oxides. 3,842,597, Cl. 60-226.00r.

Ehrich, Fredric Franklin, to General Electric Company. Sound attenuating inlet duct. 3,843,277, Cl. 415-119.000.

Ehrreich, John E.; and Reti, Adrian R., to Graham Magnetics, Inc. Method of making fine powders. 3,843,349, Cl. 75-.5ba.

Eisen- und Drahtwerk Erlau Aktiengesellschaft: *See—*
Muller, Anton; Konig, Hubert; and Strobel, Ludwig, 3,842,881.

Electrogasdynamics, Inc.: *See—*
Cowan, Philip L., 3,843,052.

Elineau, Hubert. Device for tying coils of wire. 3,842,728, Cl. 100-7.000.

Elliott, Bill J. Electric outlet box locator. 3,842,510, Cl. 33-180.00r.

Ellis, Charles A. Ear protective device. 3,842,829, Cl. 128-152.000.

Ellis, Myron P.; and Kaake, Karl H., to Micromatic Industries, Inc. Honing and plating apparatus and method embodying bore gauging means. 3,842,658, Cl. 73-37.900.

Elofson, Richard MacLeod; Milligan, Larry Patrick; Wohllebe, Jurgen; and Worsley, Michael, to Research Council of Alberta. Method of feeding ruminants N-glucosyl-N'-hydroxymethylurea. 3,843,799, Cl. 426-2.000.

Elphiac: *See—*
Biesmans, Robert, 3,842,644.

Elsworth, Raymond: *See—*
Christie, Alma Aranshew; Elsworth, Raymond; Herbert, Denis; and Sargesnt, Kenneth, 3,843,445.

Eltee Pulsitron: *See—*
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Emelyanenko, July Georgievich: *See—*
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Emerson Electric Co.: *See—*
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Frizelle, William G., 3,842,671.

Emery, Roy W. Shallow packing tray. 3,843,009, Cl. 217-26.500.

Endo, Kunio: *See—*
Shinoda, Kazuo; and Endo, Kunio, 3,842,811.

Enoguchi, Yuji: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,843,252.

Enomoto, Yuya, to Kurashiki Rayon Co., Ltd. Process for impregnating webs with polymer solutions. 3,843,389, Cl. 117-68.000.

Enright, Dorothy P.: *See—*
Perricone, Alphonse C.; Young, Homer F.; Bettge, George W.; and Enright, Dorothy P., 3,843,524.

Entreprise de Recherches et d'Activites Petrolieres (ELF): *See—*
Husson, Bernard, 3,843,952.

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Schneider, Gerhart; Lust, Sigmund; Niethammer, Konrad; Jacobi, Ernst; Erdmann, Dietrich; and Mohr, Gunther, 3,843,714.

Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, to Knapsack Aktiengesellschaft. Process for the manufacture of a cobalt molybdate catalyst. 3,843,555, Cl. 252-470.000.

Ersek, Robert A.: *See—*
Beisang, Arthur A.; and Ersek, Robert A., 3,842,831.

Eskoff, Alexander. Overhead hand operated door lock. 3,843,178, Cl. 292-262.000.

Espenlaub, Walter C.; and Leotta, Anthony D., to United States of America, Air Force. Electronic sampling system. 3,843,926, Cl. 324-102.000.

Espinosa, Rene Jose. Apparatus for preparing measured lengths of dental floss. 3,843,297, Cl. 425-289.000.

Essex International, Inc.: *See—*
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Essilor International: *See—*
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Esso Production Research Company: *See—*
Morrill, Charles D.; Herd, David P.; and Childers, Thomas W., 3,843,168.

Esso Research and Engineering Company: *See—*
Bouboulis, Constantine J., 3,843,691.
MacDonald, John MacKillop; and Hong, Charles Chuan-Chi, 3,843,515.
Magee, Ellington M.; and Healy, Frank J., 3,843,518.

Ester, John H.: *See—*
Suggitt, Robert M.; Ester, John H.; and Kravitz, Stanley, 3,843,748.

Ester, Wilhelm; Schluter, Dietrich; and Heitmann, Wilhelm, to VEBA-Chemie Aktiengesellschaft. Manufacture of vinyl acetate. 3,843,721, Cl. 260-497.00a.

Estes, John H.: *See—*
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,843,746.
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Evans, David G.: *See—*
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Evans, Howard J., to Industrial Nucleonics Corporation. X-ray gauging method and apparatus with stabilized response. 3,843,884, Cl. 250-272.000.

Evers, William J.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Novel flavoring compositions and processes. 3,843,804, Cl. 426-65.000.

Ex-Cell-O Corporation: *See—*

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Excel Incorporated: *See—*
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Fa. Kleinewefers Industrie-Companie GmbH: *See—*
Lopata, Karl Peter; and Schiffer, Gunter Heinz, 3,843,142.

Fabrizio, Gerardo, to Pierrel S.p.A. Water soluble derivative of erythromycin. 3,843,787, Cl. 424-181.000.

Facchini, Bruno, to Alden Research Foundation. Apparatus for obtaining continuously transforming projected images. 3,843,244, Cl. 353-2.000.

Faerber, Peter: *See—*
Scheit, Karl-Heinz; Faerber, Peter; Reuss, Karl; and Saiko, Otto, 3,843,629.

Fagin, Earle Reid; and Latter, Charles Franklin, to Magnatech Ltd. Vehicle weigh scale. 3,842,922, Cl. 177-1.000.

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Fairchild, John L.: *See—*
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Faldi, Giovanni. Submersible dredging pump and shovel arrangement with suspension and towing means therefor. 3,842,521, Cl. 37-57.000.

Famolare, Inc.: *See—*
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Famolare, Joseph P., Jr., to Famolare, Inc. Cross-country ski boot. 3,842,518, Cl. 36-2.5al.

Fanger, Gene O.; Flinn, James E.; Hollingsworth, Ralph G.; and Nack, Herman, to Mennen Company, Inc., The. Microcapsules and method of making same. 3,843,557, Cl. 252-316.000.

Fansler, John David; and Okarma, Stanley F., to United Aircraft Corporation. Ballistically tolerant bellcrank/rod-end. 3,842,687, Cl. 74-469.000.

Farad AB: *See—*
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Farbwerke Hoechst Aktiengesellschaft vermals Meister Lucius & Bruning: *See—*
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Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,843,661.

Farello, Luciano, to Wabsco Westinghouse S.p.A. Two way automatic brake adjuster. 3,842,951, Cl. 188-202.000.

Farenwald Enterprises, Inc.: *See—*
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Farminer, Kenneth Wilfrid; and Brooke, Christopher Miles, to Dow Corning Limited. Foam control substance. 3,843,558, Cl. 252-358.000.

Farrington, Robert K.; and Horvath, Louis T., to Teleflex Incorporated. Single lever control. 3,842,695, Cl. 74-876.000.

Fastway Fasteners, Inc.: *See—*
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Faulhaber, Mark E.: *See—*
Anthony, John D., Jr.; Faulhaber, Mark E.; and Smith, Edmund H., Jr., 3,843,890.

Faust, Carl Raymond; and Yates, Paul Clifford, to Du Pont de Nemours, E. I., and Company. Process for treating fluophosphate ores. 3,843,767, Cl. 423-167.000.

Fautz, Howard C., to Wolf Range Company, Div. of Vulcan-Hart Corporation. Grooved griddle. 3,842,726, Cl. 99-425.000.

Faxon Communications Corporation: *See—*
Campbell, John Scott; Fairchild, John L.; Lafond, Robert L.; and Kilker, Carl R., 3,843,839.

Fay, Bernard: *See—*
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Feairheller, Stephen H.; Korn, Alfred H.; Harris, Edward H., Jr.; Filachione, Edward M.; and Taylor, Maryann M., to United States of America, Agriculture. Graft polymerization of vinyl monomers onto chrome tanned hides and skins. 3,843,320, Cl. 8-94.210.

Feeny, Richard William: *See—*
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Fehmerling Associates: *See—*
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Fehmerling, Gottlieb Bernhard, to Fehmerling Associates. Process of air evacuation of foods under ultra-low pressure. 3,843,810, Cl. 426-204.000.

Felden, Alois, to Stahlgruber Otto Gruber & Company. Tire repair body. 3,842,886, Cl. 152-370.000.

Felt Products Mfg. Co.: *See—*
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Felten & Guilleaume Kablewerke Aktiengesellschaft: *See—*
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Ferguson, David E. Board game move recording system. 3,843,132, Cl. 273-136.00a.

Fernandez-Rana, Victoriano; Simon, Paul R.; and Peserik, James E., to Harris-Intertype Corporation. Method and apparatus for forming a dense shingled array of signatures. 3,842,719, Cl. 93-93.00m.

Fess, Emil; Beitzinger, Kurt; and Koblitz, Werner, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Straight-bar knitting machines. 3,842,624, Cl. 66-82.00r.

Fette, Bruce A.; and Hazlett, Lester H., to Motorola, Inc. Electronic digital adder having a high speed carry propagation line. 3,843,876, Cl. 235-175.000.

Fiala, Ernst; and Warnecke, Rolf, to Volkswagenwerk Aktiengesellschaft. Collision sensor. 3,842,930, Cl. 180-91.000.

Fidi, Werner, to AKG Akustische und Kino-Gerate Gesellschaft mbH. Artificial reverberation device using a delay element with a locally inconstant propagation property. 3,843,840, Cl. 179-1.00j.

Fiene, Michael James; and Church, Nathan Lewis, to International Nickel Company, Inc., The. Sand cast nickel-base alloy. 3,843,359, Cl. 75-171.000.

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Filippov, Andrei Nikiforovich. Antifriction material. 3,843,527, Cl. 252-12.000.

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Filter, Walther, to Vereinigte Osterreichisch Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft and Etablissement Wanderfield & Co. Shuttle-reversing means. 3,842,868, Cl. 139-134.000.

Finch, Neville; and Vlattas, Isidoros, to Ciba-Geigy Corporation. 16-Lower alkoxy lower alkyl, 16-20ω-petanor PGE_1. 3,843,713, Cl. 260-468.00d.

Findeisen, Kurt; Holtschmidt, Hans; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for preparing quinazolines. 3,843,652, Cl. 260-251.00q.

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Firestone Tire & Rubber Co., The: *See—*
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Fischer, Robert T., to Miner Enterprises, Inc. Gravity and pneumatic discharge assembly for hopper. 3,843,204, Cl. 302-52.000.

Fischman, Martin, to GTE Sylvania Incorporated. Wide band frequency modulation detector. 3,843,932, Cl. 329-117.000.

Fishman, Jerry Haskel. Polypeptide materials bound to fluorocarbon polymers. 3,843,443, Cl. 195-63.000.

Fitch, Clifford E.; and Fitch, Clifford E., Jr. Slicing machine for slicing a food product or the like. 3,842,698, Cl. 83-88.000.

Fitch, Clifford E., Jr.: *See—*
Fitch, Clifford E.; and Fitch, Clifford E., Jr., 3,842,698.

Fitterer, Horst; Uhl, Karl; Guenther, Friedrich; Schmidts, Kurt; and Gaiser, Dieter, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Guide element for magnetic tapes. 3,843,035, Cl. 226-195.000.

Fitzgerald, Emerson B., to Du Pont de Nemours, E. I., and Company. Glamour powder coating composition containing at least two different colored powders and reflective flakes. 3,843,571, Cl. 260-17.00r.

Fitzmayer, Louis H.: *See—*
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Flavell, John; Jeffcoat, Keith; and Betts, Max William, to Courtaulds Limited. Knitting machines. 3,842,623, Cl. 66-64.000.

Flegel, Michael W. Bicycle cart connector. 3,843,164, Cl. 280-492.000.

Flemings, Merton C.: *See—*
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Flinn, James E.: *See—*
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Flinn, William S.: *See—*
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Florens, Raymond Leopold; and Vandenabeele, Hubert, to AGFA-Gevaert N.V. High temperature processing of photographic elements. 3,843,364, Cl. 96-50.00r.

Florian, Raymond J. Golf putter head. 3,843,122, Cl. 273-81.00a.

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Focke, Heinz-Hermann; and Liedtke, Kurt Willy, to Focke & Pfuhl. Apparatus for filling cartons and the like with objects, for example bottles. 3,842,571, Cl. 53-186.000.
Folser, Karl: *See—*
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Fontaine, John G., to Fail Safe Brake Corporation. Automatic parking or emergency brake system for motor vehicles. 3,842,950, Cl. 188-170.000.
Fontana, Anna, to Catellono, Michele. Press for exposure and photoengraving. 3,843,256, Cl. 355-89.000.
Fontenier, Guy: *See—*
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Food Technology, Inc.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,843,820.
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Forker, Raymond A.: *See—*
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Forsten, Irving, to United States of America, Army. Rocket power plant. 3,842,598, Cl. 60-259.000.
Foster, David Blythe, to Science Nightingale International Limited, mesne. Motor vehicles incorporating means for protecting the occupants in the event of collision accidents. 3,843,155, Cl. 280-155.00b.
Foster, Homer R.: *See—*
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Fouquet-Werk Frauz & Planck: *See—*
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Fowler, John G., to Metal Compacting Tools, Ltd. Press Tools. 3,843,287, Cl. 425-78.000.
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Fox, Richard L. T., to Picker Corporation. Method and apparatus for inspecting tires. 3,843,888, Cl. 250-360.000.
Framer, Hyman. Coilable closure device. 3,842,890, Cl. 160-26.000.
France, David W.: *See—*
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Frank, Anton: *See—*
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Frank, Gary D., to Clark Equipment Company. Extended reach mechanism for a truck. 3,843,003, Cl. 214-762.000.
Frank, Jan: *See—*
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Frank, Wilhem, to Wilh. Frank GmbH. Covering and stair access for openings in ceilings, roofs and similar wall structures. 3,842,935, Cl. 182-81.000.
Franzen, Gustav, to Palitex Project-Company GmbH. Apparatus for positioning, stopping and locking of a service carriage mechanism of a textile yarn processing machine. 3,842,577, Cl. 57-34.00r.
Franzen, Gustav, to Palitex Project-Company GmbH. Suction mechanisms for yarn processing machines. 3,842,580, Cl. 57-34.00r.
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Freake, Ronald; and Haden, Billy Harper, to Miles Laboratories, Inc. Microbiological test article. 3,843,452, Cl. 195-13.500.
Freake, Ronald, to Miles Laboratories, Inc. Process and composition for use in microbiological quality assurance. 3,843,453, Cl. 195-13.50r.
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Frevel, Ludo K.; and Kressley, Leonard J., to Dow Chemical Company, The. Alkyl amindosulfinic acid (bis-alkylamine) salts and method for their preparation. 3,843,722, Cl. 260-501.120.
Frey, Volker; and Kreiss, Bernhard, to Consortium fur Elektrochemsche Industrie GmbH. Process for preparing butanone selectively mono- or dichloro-substituted in 3-position. 3,843,731, Cl. 260-593.00h.
Fried. Krupp Gasellschaft mit beschrankter Haftung: *See—*
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Friedrich, Heinz; and Neugebauer, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of a catalyst suitable for the oxidation of methanol to formaldehyde. 3,843,562, Cl. 252-469.000.
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Frizelle, William G., to Emerson Electric Co. Flowmeter. 3,842,671, Cl. 73-209.000.
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Fuher, Reginald Samuel: *See—*
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Fujimaki, Masaru; Okamoto, Takehiko; and Tashiro, Mikio, to Teijin Limited. Apparatus for detecting breakage of blade of rotary cutter. 3,843,871, Cl. 234-92.0pd.
Fujimi, Yukio: *See—*
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Fujita, Isamu; Otoi, Kiyoshi; and Yoneya, Tooru, to Kanebo, Ltd. Production of e-caprolactam. 3,843,630, Cl. 260-239.30a.
Fujita, Takaya: *See—*
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Gabano, Jean-Paul; and Lehmann, Gerard, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Method of preparing non-aqueous electrolyte free of any trace of free aluminum chloride. 3,843,414, Cl. 136-156.000.
Gabonalermesztesi Kutato Inlezet: *See—*
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Gabriel, Henry, to Phillips Petroleum Company. Article labeling method. 3,843,438, Cl. 156-244.000.
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GAF Corporation: *See—*
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Galle, Edward M.: *See—*
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Gardner-Denver Company: *See—*
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Garlock Inc.: *See—*
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Garrett, Billy R. Holder for gasoline lantern. 3,843,082, Cl. 248-226.00e.

Garrison, Harold Keith: *See—*
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Gasper, Kenneth A.: *See—*
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Gates, Allen Peter, to Howson-Algraphy Limited. Light sensitive polymeric esters containing azido substituted styryl groups. 3,843,603, Cl. 260-47.0ep.

Gates, David S.: *See—*
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Gates, David S.; Hagstrom, Paul E.; and Haseltine, Marcus W., to Sun Oil Company of Pennsylvania, mesne. Lubrication of controlled-slip differential. 3,843,534, Cl. 252-45.000.

Gatzi, Karl, to Ciba-Geigy Corporation. Carbamoyl oximes. 3,843,724, Cl. 260-566.0ac.

Gauterin, Charles Rowland: *See—*
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Gaynor, Joseph, to Bell & Howell Co. Electrophotography using induced electrostatic images. 3,843,361, Cl. 96-1.400.

Gebruder Buehler AG: *See—*
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Geiszler, Lorinc; deceased (by Geiszler, Henriette; heiress); Simon, Tibor; Varga, Mihaly; and Tolnay, Agoston, to Egyesult Izzolampaes Villamossagi Reszenytarsasag. Circular burner for the vacuum-tight pinching of light sources having quartz tubes. 3,843,57, Cl. 239-132.300.

Gellert, Dale A., to Procter & Gamble Company, The. Removable diaper topsheet portion for disposal of solid wastes. 3,842,838, Cl. 128-28.00a.

General Electric Company: *See—*
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General Foods, Limited: *See—*
Chaplow, Richard A.; and Hodgman, Ronald A., 3,843,822.

General Mills, Inc.: *See—*
Touba, Ali R., 3,843,816.
Wren, Martha A.; and Mullen, Joseph D., 3,843,818.

General Motors Corporation: *See—*
Blonn, George W., Sr., 3,842,653.
Cataldo, Roy S., 3,842,808.
Fuqua, Lloyd T., 3,842,709.
Marlow, Jerry R., 3,842,694.
Riddel, John W., 3,842,673.
Smith, Stanley E.; and Steck, James R., 3,843,237.

General Partitions Mfg. Corporation: *See—*
Brendgord, Thomas, 3,842,556.

General Tire & Rubber Company, The: *See—*
Colburn, James R., 3,843,060.

Genetic Laboratories, Inc.: *See—*
Beisang, Arthur A.; and Ersek, Robert A., 3,842,831.

Gentils, Marcel, to Essilor International. Draftsman compasses. 3,842,508, Cl. 33-157.000.

Genuit, Luther L.; and Nowell, John R., to Honeywell Information Systems, Inc. Adjustable over-current detector. 3,843,907, Cl. 317-27.00r.

Georg Fischer Aktiengesellschaft: *See—*
Burger, Hans, 3,843,104.

Gerard, Milan E., to Rohr Industries, Inc. Method of installing attachment fittings in cellular material. 3,842,486, Cl. 29-481.000.

Gerber, Oskar, to Gerber, Oskar, Schall- u. Schwingungstechnik GmbH. Sound-damping installation for running-up aircraft. 3,842,941, Cl. 181-33.0hb.

Gerber, Oskar, Schall- u. Schwingungstechnik GmbH: *See—*
Gerber, Oskar, 3,842,941.

Gerdes, Theo: *See—*
Blau, Werner; and Gerdes, Theo, 3,843,015.

Gerke, Burton Elwood, Jr.; and Rohr, Lewis Hampton, to Black and Decker Manufacturing Company, The. Detachable cord set for electric device. 3,843,224, Cl. 339-58.000.

Gerlovich, Albert, to Rheem Manufacturing Company. Shroud for spraying apparatus. 3,842,798, Cl. 118-326.000.

Gerry, Martin E. Low inertia impact print head. 3,842,960, Cl. 197-53.000.

Geuens, Gaston-Hugo: *See—*
Zwart, Jacob; Wielockx, Hugo-Guido; and Geuens, Gaston-Hugo, 3,842,567.

Geurtsen B.V.: *See—*
Geurtsen, Johannes Theodorus; and Geurtsen, Theodorus Johannes Antonius, 3,842,449.

Geurtsen, Johannes Theodorus; and Geurtsen, Theodorus Johannes Antonius, to Geurtsen B.V. Transport apparatuses for bedridden persons. 3,842,449, Cl. 5-81.00r.

Geurtsen, Theodorus Johannes Antonius: *See—*
Geurtsen, Johannes Theodorus; and Geurtsen, Theodorus Johannes Antonius, 3,842,449.

Ghiotto, Renzo. Autoclave tank for hydraulic lifting plants. 3,842,863, Cl. 138-30.000.

Giacosa, Dante, to Sira Societa Industriale Recerche Automotoristiche. Water jet impellor unit having a steering control device. 3,842,787, Cl. 115-16.000.

Gibbons, Edward J., to Colgate-Palmolive Company. Apparatus for introducing ingredients into a spray drying tower. 3,842,888, Cl. 159-4.0cc.

Gibbs, Dale S.; and Wessling, Ritchie A., to Dow Chemical Company, The. Reducing heat-seal temperature requirements for coatings prepared from latexes of vinylidene chloride polymers. 3,843,581, Cl. 260-29.6ta.

Gibbs, Dale S.; and Wessling, Ritchie A., to Dow Chemical Company, The. Reducing heat-seal temperature requirements for coatings prepared from latexes of vinylident chloride polymers. 3,843,582, Cl. 260-29.6ta.

Gibbs, Dale S.; and Wessling, Ritchie A., to Dow Chemical Company, The. Reducing heat-seal temperature requirements for coatings prepared from latexes of vinylidene chloride polymers. 3,843,583, Cl. 260-29.6ta.

Gibel, Stephen J. Sound-trap muffler. 3,842,932, Cl. 181-50.000.

Giese, Bernd; Jaeger, Peter; Koenig, Horst; and Brenner, Siegfried, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 4-endotricyclo(5,2,1,02,6-endo)-decylamine. 3,843,499, Cl. 204-74.000.

Giger, Urs, to Eta A.G. Ebauches-Fabrik. Arrangement for securing the hairspring stud on a watch frame part. 3,842,592, Cl. 58-115.000.

Gilberd, Gordon Henry, to Hadfield, Gilberd, Pile Company Limited. Piling methods. 3,842,609, Cl. 61-53.600.

Gilbert, Lynford W.: *See—*
Rushing, Frank C.; Gilbert, Lynford W.; and Williams, Norman P., 3,843,238.

Gilbert, Richard Lyman; Hryck, Michael David; and Mako, John, to International Business Machines Corporation. Print hammer registration control. 3,842,736, Cl. 101-93.140.

Gilbert, Seymour G.: *See—*
Wieth, Wolf R.; Wang, Shaw S.; and Gilbert, Seymour G., 3,843,446.

Giles, James N., to Advanced Micro Devices, Inc. High speed transistor difference amplifier. 3,843,934, Cl. 330-30.00d.

Gillette Company, The: *See—*
Dorion, Francis W., Jr.; Douglass, Paul W.; Nissen, Warren I.; and Perry, Roger L., 3,842,499.

Giovannozzi, Frank V., to Stacker System, Inc. Pressurized mortar pot apparatus. 3,843,026, Cl. 222-389.000.

Girling Limited: *See—*
Fredrick, Ralph Nigel Douglas, 3,842,948.
Ingram, Brian; and Harries, David Anthony, 3,843,209.
Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,843,211.
Newstead, Charles, 3,842,949.
Schroder, Dieter; and Hess, Wolfgang, 3,843,213.

Gittleman, Johathan Isaac; and Hanak, Joseph John, to RCA Corporation. Sputtered granular ferromagnetic iron-nickel-silica films. 3,843,420, Cl. 148-31.550.

Giuffre, George Joseph: *See—*
DiFazio, James Joseph; Giuffre, George Joseph; and Karsch, Arthur Frederick, 3,843,362.

Givaudan Corporation: *See—*
Manowitz, Milton; Sharpell, Frederick H., Jr.; and Stegmann, Carolyn, 3,843,519.

Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, to Food Technology, Inc. Thin film drying of sorghum syrup with addition of soy protein. 3,843,820, Cl. 426-378.000.

Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, to Food Technology, Inc. Thin film drying of molasses with addition of soy protein. 3,843,821, Cl. 426-378.000.

Glacier Metal Company, Limited, The: *See—*
Couper, Neale S., 3,842,473.

Glass, Marvin, & Associates: *See—*
Licitis, Gunars; and Glass, Marvin I., 3,843,128.

Glass, Marvin I.: *See—*
Licitis, Gunars; and Glass, Marvin I., 3,843,128.

Glaverbel S.A.: *See—*
Toussaint, Francois; Laroche, Pierre; Schottey, Jean; and Lambert, Emmanuel, 3,843,472.
Zwart, Jacob; Wielockx, Hugo-Guido; and Geuens, Gaston-Hugo, 3,842,567.

Glaverbel-Mecaniver: *See—*
Jose, Jean; Declaye, Joseph; Albert, Roger; and Bodart, Marcel, 3,843,264.

Gleason Works, The: *See—*
Hunkeler, Ernst J., 3,842,477.
Kuhn, Howard A., 3,842,646.

Glenn, John G.; Ziegler, Walter; and Carter, Ned C., to Sunkist Growers, Inc. Fruit slicing apparatus. 3,842,727, Cl. 99-592.000.

Global Marine Inc.: *See—*
Allen, Grant H.; and Perkins, Billie L., 3,842,780.

Globe-Union Inc.: *See—*
Orlando, Daniel; Kirchberger, Walter Carl; and Ware, John Clark, Jr., 3,843,411.

Goedecke, Hans: *See—*
Sauerwein, Kurt; and Goedecke, Hans, 3,843,891.

Goff, Cecil N.: *See—*
Hedbawny, Edward J.; Holston, Aubrey G.; Goff, Cecil N.; and Holston, Aubrey G., 3,842,770.

Goff, Richard E., Jr.: *See—*
Campbell, Roger G.; Goff, Richard E., Jr.; and Guay, Normand D., 3,842,437.
Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Guay, Normand D., 3,842,438.

Gold, Elijah H., to Schering Corporation. Method for the treatment of benign prostatic hypertrophy and acne. 3,843,793, Cl. 424-324.000.

Golden, Gerald; Wrobel, Charles V., Jr.; and Dian, Walter, to Beatrice Foods Co., mesne. Method of sealing and mounting reflectors on bicycle pedal treads. 3,843,433, Cl. 156-73.000.

Golden, Gerald; Wrobel, Charles V., Jr.; and Dian, Walter, to Excel Incorporated. Arcylic reflex reflictor and sealing means therefor. 3,843,474, Cl. 161-4.000.

Golland, Wesley A.; Mahoney, Eugene T.; and Minuk, Donald, to Keene Corporation. Coin handling system. 3,843,203, Cl. 302-2.00r.

Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha. Printer. 3,842,734, Cl. 101-93.340.

Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha. Printer. 3,842,737, Cl. 101-93.340.

Gonzalez-Cuzan, Alfredo. Locking device for a safety grill. 3,843,176, Cl. 292-218.000.

Goodman Equipment Corporation: *See—*
Kamner, Haim J., 3,842,964.

Goodman, H., & Sons, Inc.: *See—*
Goodman, Jacob, 3,842,849.

Goodman, Jacob, to Goodman, H., & Sons, Inc. Pony-tail holder. 3,842,849, Cl. 132-46.00r.

Goodrich, B. F., Company, The: *See—*
Kramer, James H., 3,843,476.

Goodridge, Paul A.: *See—*
Haas, James Lynn; and Goodridge, Paul A., 3,843,100.

Goodstal, Laurence K.; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., to Remington Arms Company. Numerical control checkering system. 3,843,875, Cl. 235-151.110.

Gordon, David A.: *See—*
Seltzer, Raymond; and Gordon, David A., 3,843,649.

Gordon, Harry W., to Schmid Laboratories, Inc., mesne. Method of treating prostatic hypertrophy with levorin. 3,843,785, Cl. 424-120.000.

Gothard, Ramon A.: *See—*
Willis, Earl C.; and Gothard, Ramon A., 3,842,610.

Gouda, Masatoshi: *See—*
Kamiyoshi, Masaya; Gouda, Masatoshi; and Kuramoto, Naoya, 3,843,484.

Gough, Vernon E.; and Waller, Roy E. S., to Dunlop Company Limited, The. Pneumatic tire having sidewalls of unequal length. 3,842,882, Cl. 152-352.000.

Gould Inc.: *See—*
Rhne, Earl C., 3,843,918.

Grace, W. R., & Co.: *See—*
McKinney, Robert W.; Dixon, Andrew L., Jr.; and Jordan, Raymond L., 3,843,517.
Morgan, Charles R., 3,843,572.

Grachev, Leonid Pavlovich; Anikanov, Nikolai Vianovich; Zaks, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich. Apparatus for conveying piece articles, particularly of newspapers, in perpendicular directions. 3,842,962, Cl. 98-25.000.

Graham, George A.: *See—*
Luce, Nunzio A.; and Graham, George A., 3,842,589.

Graham Magnetics, Inc.: *See—*
Ehrreich, John E.; and Reti, Adrian R., 3,843,349.

Graham, Marvin M.; and Caparone, Michael J., to Robertshaw Controls Company. Heating control system. 3,843,308, Cl. 431-22.000.

Graham, Tom L., to Graham, Tom L., Jr. Strip material container and dispenser. 3,843,071, Cl. 242-55.530.

Graham, Tom L., Jr.: *See—*
Graham, Tom L., 3,843,071.

Grannen, Edward A.; and Robinson, Leon, to Occidental Petroleum Corporation. Microwave pyrolysis of wastes. 3,843,457, Cl. 201-2.500.

Grassman, Delbert D.: *See—*
Zingg, Warren M.; and Grassman, Delbert D., 3,842,910.

Gravicast Patentverwertungsgesellschaft m.b.H.: *See—*
Noisser, Alois; and Nowak, Gerhard, 3,842,900.

Grawey, Charles E.; and Probert, Kenneth D., to Caterpillar Tractor Co. Method of making a non-curing gasket for opposed surfaces. 3,843,764, Cl. 264-330.000.

Gray, Peter R.: *See—*
Barton, Hugh M., Jr.; and Gray, Peter R., 3,843,881.

Gray, Vernon H. Methods and apparatus for heat transfer in rotating bodies. 3,842,596, Cl. 60-39.660.

Green, Charles A. Flotation machine and impeller therefor. 3,843,101, Cl. 259-96.000.

Green, Joseph: *See—*
Roth, Shirley H.; and Green, Joseph, 3,843,526.

Greenberg, Walter H.; and Nussbaum, Frank J., to Bischoff Chemical Corporation. Injection molding machine with adjustable nozzle length means. 3,843,295, Cl. 425-248.000.

Greenwald, Warren E., to Vishay Intertechnology, Inc. Mechanical force gauge. 3,842,666, Cl. 73-141.00a.

Gregory, R. Kirk; and Flathau, Robert J., to Symons Corporation. Column-mounted shoring bracket assembly for overhead formwork. 3,843,084, Cl. 248-295.000.

Greiner, Henri: *See—*
Masson, Yves; and Greiner, Henri, 3,842,883.

Grewe, Ferdinand: *See—*
Widdig, Arno; Kuhle, Engelbert; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul Ernst, 3,843,715.

Groen, Siemen H.; Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., to Stamicabon B.V. Process for the preparation of piperidines. 3,843,659, Cl. 260-293.520.

Groff, Ronald Parke, to Du Pont de Nemours, E. I., and Company. Method and apparatus for modulating light with a magnetic field. 3,843,939, Cl. 332-7.510.

Grohoski, Edward G.: *See—*
Morton, Robert D.; and Grohoski, Edward G., 3,842,633.

Gronstedt, Bo. Hydraulically actuated pipe coupling. 3,843,167, Cl. 285-18.000.

Groppenbacher, Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, to Boehringer Mannheim GmbH. Process for coating tablets and making dragees. 3,843,393, Cl. 117-100.00a.

Groves, Malcolm D.: *See—*
Bevilacqua, Frank; Dietrich, Joseph R.; Groves, Malcolm D.; and Flinn, William S., 3,843,471.

Gruenhagen, Henry W. A. Bi-flush toilet apparatus. 3,842,444, Cl. 4-67.00a.

Grumman Ecosystems Corporation: *See—*
Sargent, Edward A.; and Doner, Arthur J., 3,842,762.

Grunert, Wilhelm, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Governors for gas turbines. 3,842,594, Cl. 60-39.28r.

Grunewald-Kirstein, Ingeborg. Method for preparing coated popcorn. 3,843,814, Cl. 426-307.000.

Grunzweig & Hartmann Aktiengesellschaft: *See—*
Hauser-Lienhard, Hans-Ulrich, 3,842,899.

GTE Sylvania Incorporated: *See—*
Fischman, Martin, 3,843,932.
Say, Donald L., 3,843,900.

GTI Corporation: *See—*
Bennett, Kenneth R.; and Crownover, Joseph W., 3,842,495.

Guay, Normand D.: *See—*
Campbell, Roger G.; Goff, Richard E., Jr.; and Guay, Normand D., 3,842,437.
Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Guay, Normand D., 3,842,438.

Guenther, Friedrich: *See—*
Fitterer, Horst; Uhl, Karl; Guenther, Friedrich; Schmidts, Kurt; and Gaiser, Dieter, 3,843,035.

Guilhem, Jacques: *See—*
Edwards, Norman W.; Petro, Michael; Guilhem, Jacques; and Pierre, Jean, 3,842,775.

Guillot, Georges: *See—*
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Gulf Research & Development Company: *See—*
Bacha, John D.; and Selwitz, Charles M., 3,843,709.
Bailey, Wayne W.; and McCarthy, Paul R., 3,843,528.
Selwitz, Charles M., 3,843,511.

Gulf Research and Development Company: *See—*
Harper, Earl F.; and Williamson, Roger C., 3,843,739.

Gulick, Ronald A., to Research Engineering Company. Automatically disengageable manual control. 3,842,690, Cl. 74-625.000.

Gunsher, Jeffery A.: *See—*

Pews, R. Garth; and Gunsher, Jeffery A., 3,843,650.

Guptill, Frank E., Jr.: *See—*
Wilson, Raymond F.; Peck, Reese A.; and Guptill, Frank E., Jr., 3,843,508.

Guth, Lauren W.; and Roy, Mahlon T., to General Electric Company. Waste disposer apparatus. 3,843,066, Cl. 241-100.500.

Gutman, Nathan; Larsen, Dorwin R.; and Volle, Everette M., to Caterpillar Tractor Company. Asphalt reclaimer. 3,843,274, Cl. 404-91.000.

H & L Distributing Company: *See—*
Harville, Walter H., 3,843,293.

Haas, James Lynn; and Goodridge, Paul A., to Owens-Corning Fiberglas Corporation. Method and apparatus for mixing solids and liquids. 3,843,100, Cl. 259-25.000.

Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Imaging system with an aligned liquid crystal image contrasted by a non-aligned liquid crystal background. 3,843,230, Cl. 350-157.000.

Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Aligning agent for lowering the threshold voltage required to effect an optically negative to optically positive phase transition. 3,843,233, Cl. 350-160.0lc.

Haase, Gerhard: *See—*
Asselborn, Peter; Haase, Gerhard; and Menne, Guenther, 3,843,909.

Haase, Kurt H. Ruler device for decimal-octal conversion. 3,843,048, Cl. 235-84.000.

Habicht, Ernst; Libis, Bernard; and Zergenyi, Janos, to Ciba-Geigy Corporation. Saluretic and diuretic compositions and method with 2,3-dihydro-5-(2-nitro-1-alkenyl)-benzofuran-2-carboxylic acids and pharmaceutically acceptable salts. 3,843,797, Cl. 424-28.000.

Hackett, Norman Henry, to Hackett, Norman, Patents Holdings Pty. Limited. Booster unit for vehicle hydraulic brake systems. 3,842,604, Cl. 60-563.000.

Hackett, Norman, Patents Holdings Pty. Limited: *See—*
Hackett, Norman Henry, 3,842,604.

Haden, Billy Harper: *See—*
Freake, Ronald; and Haden, Billy Harper, 3,843,452.

Haden, Billy Harper; and Freake, Ronald. Device for implementing the delivery storage and use of microorganisms. 3,843,456, Cl. 195-139.000.

Hadfield, Gilberd, Pile Company Limited: *See—*
Gilberd, Gordon Henry, 3,842,609.

Haefele, Joseph E.; Hawkins, Cecil R.; and Kubec, Ronald E., to International Business Machines Corporation. Magnetic recording coating. 3,843,404, Cl. 117-235.000.

HAG Aktiengesellschaft: *See—*
Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, 3,843,823.
Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, 3,843,824.

Hagan, Ward S., to Warner-Lambert Company. Shaving unit for safety razor. 3,842,502, Cl. 30-346.580.

Hagen, Donald J.: *See—*
Kishpaugh, Allan; and Hagen, Donald J., 3,843,806.

Hagen, William F., to Turbo Refrigerating Company. Ice rake for ice making apparatus. 3,842,993, Cl. 214-17.0db.

Hagstrom, Paul E.: *See—*
Gates, David S.; Hagstrom, Paul E.; and Haseltine, Marcus W., 3,843,534.

Haines, Robert S., to International Business Machines Corporation. Methods of manufacturing ferromagnetic carbon modified chromium oxide and compositions and recording media containing same. 3,843,403, Cl. 117-235.000.

Hainski, Martha B.; and Ordonez, Guido A., to Baxter Laboratories, Inc. Hemolytic assay system. 3,843,777, Cl. 424-13.000.

Halasa, Adel Farhan: *See—*
Kyker, Gary Stephen; Beckman, Joseph Alfred; Halasa, Adel Farhan; and Hall, James Edward, 3,843,596.

Halcon International, Inc.: *See—*
Schmidt, John P.; and Garcia, Alfredo, Jr., 3,843,488.

Hale, William B. Adjustable trailer hitch. 3,843,163, Cl. 280-490.00r.

Hall, James Edward: *See—*
Kyker, Gary Stephen; Beckman, Joseph Alfred; Halasa, Adel Farhan; and Hall, James Edward, 3,843,596.

Halliburton Company: *See—*
Knox, John A.; and Fredrickson, Sherman E., 3,842,911.
Morrisett, O. L.; and Boehm, Gail M., 3,842,905.
Paramore, Edwin L.; and Howe, Tom W., 3,842,906.

Hallmark Cards, Inc.: *See—*
Easterday, David E., 3,843,312.

Hamasaki, Masafumi: *See—*
Harada, Ikuo; Hamasaki, Masafumi; Maeda, Isao; and Izawa, Nobuyuki, 3,843,150.

Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., to International Business Machines Corporation. Two-way or circuit using Josephson tunnelling technology. 3,843,895, Cl. 307-212.000.

Hamill, Robert L.; and Hehn, Marvin M., to Lilly, Eli, and Company. Antibiotics A201A and A201B and process for the production thereof. 3,843,784, Cl. 424-119.000.

Hamilton, Vern E.; and Thorburn, Eugene K., to McDonnell Douglas Corporation. Aspheric lens generator. 3,842,713, Cl. 90-11.00c.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,843,679.

Hammel, Joseph J.; and Allersma, Ties, to PPG Industries, Inc. Method of making thermally stable and crush resistant microporous glass catalyst supports. 3,843,341, Cl. 65-22.000.

Hammelmann, Paul. Apparatus for separating rubber from embedded reinforcements. 3,843,061, Cl. 241-38.000.

Hammond, Harry H.: *See—*
Karcher, Thomas D.; and Hammond, Harry H., 3,842,614.

Hanada, Hiroshi: *See—*
Katayama, Hirohiko; Hanada, Hiroshi; and Kasai, Masanao, 3,843,394.

Hanak, Joseph John: *See—*
Gittleman, Johathan Isaac; and Hanak, Joseph John, 3,843,420.

Hanaoka, Teruo; Naito, Hiro; Komatsu, Akitoshi; Koyama, Keizi; Kobayashi, Mitsuki; and Ohishi, Naoaki, to Showa Denko Kabushiki Kaisha. Sintered tantalum for electrodes of capacitors. 3,843,360, Cl. 75-222.000.

Hannan, William James, to RCA Corporation. Color motion picture film playback system. 3,843,836, Cl. 358-45.000.

Hanneman, Richard L.: *See—*
Horton, Arthur E.; Brantley, Jordan W.; Smith, Paul R.; Lightfoot, Cecil W.; and Hanneman, Richard L., 3,843,911.

Hanni, Manfred, to Siemens Aktiengesellschaft. Time multiplex transmission system. 3,843,927, Cl. 325-4.000.

Hans-Detlef, Berndt: *See—*
Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Hans-Detlef, Berndt, 3,843,631.

Hansen, Aage Ansgar; and Lane, Ralph David, to International Business Machines Corporation. High-voltage integrated driver circuit and memory embodying same. 3,843,954, Cl. 340-173.00r.

Hansen, David D.: *See—*
Rediger, John R.; and Hansen, David D., 3,843,191.

Hansen Manufacturing Company, The: *See—*
Karcher, Thomas D.; and Hammond, Harry H., 3,842,614.

Hansson, Hans: *See—*
Billgren, Karl Lennart; and Hansson, Hans, 3,842,553.

Happel, John: *See—*
Kramer, Leonard; and Happel, John, 3,843,744.

Harada, Ikuo; Hamasaki, Masafumi; Maeda, Isao; and Izawa, Nobuyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Rapidly inflatable impact cushioning device for high-speed travelling vehicle. 3,843,150, Cl. 280-150.0ab.

Harada, Yuji; and Yoshizawa, Akihiko, to Canon Kabushiki Kaisha. Rigid compact electronic computer. 3,843,851, Cl. 200-5.000.

Hardy, Charles J.: *See—*
James, William R.; and Hardy, Charles J., 3,843,185.

Hargest, Thomas S. Surgical dressing and method of forming the same. 3,842,830, Cl. 128-155.000.

Harkreader, Gordon G.: *See—*
Richardson, Dean E.; and Harkreader, Gordon G., 3,843,616.

Harnau, Hans-Dieter, to Rheinmetall GmbH. Electrical igniter with a ceramic or quartz element as source of electrical energy for shells or missiles, and particularly for small-caliber shells. 3,842,742, Cl. 102-70.2ga.

Harnischfeger Corporation: *See—*
Svede, George E., 3,842,985.

Harper, Earl F.; and Williamson, Roger C., to Gulf Research and Development Company. Process for transalkylating diethyl benzene. 3,843,739, Cl. 260-672.00t.

Harrell, Bob G., to Jackes-Evans Manufacturing Company. T-type locker handle. 3,843,173, Cl. 292-7.000.

Harrell, William C.; and Foster, Homer R., to PPG Industries, Inc. Method and apparatus for delivery of molten glass to a float forming process. 3,843,345, Cl. 65-65.00a.

Harries, David Anthony: *See—*
Ingram, Brian; and Harries, David Anthony, 3,843,209.
Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,843,211.

Harris, Edward H., Jr.: *See—*
Feairheller, Stephen H.; Korn, Alfred H.; Harris, Edward H., Jr.; Filachione, Edward M.; and Taylor, Maryann M., 3,843,320.

Harris-Intertype Corporation: *See—*
Fernandez-Rana, Victoriano; Simon, Paul R.; and Peserik, James E., 3,842,719.
Schaffer, Robert H., 3,843,113.
Southam, Donald L.; and Gaffney, John Marshall, 3,842,735.

Harrison, David Malcolm, to Allied Chemical Corporation. Method and apparatus to prevent melted yarn when stopped in a high temperature yarn texturing jet. 3,842,468, Cl. 28-1.400.

Harrison, Thomas S., to Sterling Drug Inc. Dispensing treated towelettes. 3,843,017, Cl. 221-63.000.

Hartenstein, Johannes Hermann; and Satzinger, Gerhard, to Warner-Lambert Company. Process for the isolation of convallatoxini acetonide. 3,843,627, Cl. 260-210.500.

Hartford Special Machinery Company, The: *See—*
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Harting, Darrell R.; and Taylor, John W., to Boeing Company, The. Demodulated resonance analysis system. 3,842,663, Cl. 73-67.200.

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Imai, Hiroshi; and Nakagawa, Momoki, to ITT Industries Inc. Mounting device for depending structural members from deck plate or the like. 3,843,080, Cl. 248-58.00e.
Imperial Chemical Industries Limited: *See—*
Baranyovits, Francis Leslie Charles; and Kay, Ian Trevor, 3,843,655.
King, Kenneth Bryan, 3,843,501.
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Imperial Smelting Corporation (Alloys) Limited: *See—*
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Industrial Nucleonics Corporation: *See—*
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Heiks, Robert Lee; Kasson, Gerald A.; and McCall, Robert Eugene, 3,843,434.
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Priaroggia, Paulo Gazzana; and Maschio, Gabriele, 3,843,830.
Ing, Paul W., to International Business Machines Corporation. Apparatus for high temperature semiconductor processing. 3,842,794, Cl. 118-49.000.
Ingram, Brian; and Harries, David Anthony, to Girling Limited. Hydraulic braking systems for vehicles. 3,843,209, Cl. 303-21.0cg.
Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, to Girling Limited. Anti-skid hydraulic braking systems. 3,843,211, Cl. 303-21.00f.
Ingwalson, Raymond W.: *See—*
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Inland Container Corporation: *See—*
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Institut Francois du Petrole, des Carburants et Lubrifiants: *See—*
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Gilbert, Richard Lyman; Hryck, Michael David; and Mako, John, 3,842,736.
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Haines, Robert S., 3,843,403.
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Pierret, Jean-Marc; Lautier, Alex Honore; Maddens, Francis Paul; and Nussbaumer, Henri Jean, 3,843,942.
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International Nickel Company, Inc., The: *See—*
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International Telephone and Telegraph Corporation: *See—*
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Menelly, Richard A., 3,842,469.
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Ishige, Sadao; Hayashi, Takao; and Kato, Hajime, to Fuji Photo Film Co., Ltd. Recording sheet employing an aromatic carboxylic acid. 3,843,383, Cl. 117-36.800.
Ishiguro, Tatsuo; and Iijima, Yukihiko, to Nippon Electric Company, Limited. Differential pulse code modulation transmission system. 3,843,940, Cl. 332-9.00r.
Ishii, Masao: *See*—
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Ishii, Tsutomu: *See*—
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Ishikawa, Yoshitaka, to Sumitomo Shipbuilding & Machinery Co., Ltd. Suspension preheater for firing system. 3,843,314, Cl. 432-58.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
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Itoh, Yasuo: *See*—
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Sterling, Henley Frank; and Alexander, John Henry, 3,843,392.
Iversen, Poul Christian Carlos, to Danfoss A/S. Apparatus for measuring quantities of heat used in hot-water heating installations. 3,842,669, Cl. 73-193.00r.
Ivon, Vasily Valdimirovich: *See*—
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.
Iwao, Kumiry Roy; and Wadsworth, Brent Earl, to Varian Associates. Automatic sampler apparatus of modular construction. 3,842,679, Cl. 73-423.000.
Iwasa, Jurzo; Naruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Sohji, Yukinobu, to Dainippon Pharmaceutical Co., Ltd. Anti-peptic ulcer substance from corydalis tubers. 3,843,788, Cl. 424-195.000.
Iwasaki, Kyuhachiro, to Ricoh Co., Ltd. Dot printer. 3,842,955, Cl. 197-1.00r.
Iyama, Sadaomi; and Uchida, Yasuo, to Konishiroku Photo Industry Co., Ltd. Exposure time control device for use in cameras. 3,843,248, Cl. 354-32.000.
Izawa, Nobuyuki: *See*—
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Jackes-Evans Manufacturing Company: *See*—
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Jackson, Billy G.; Stamper, Martha C.; and Bottorff, Edmond M., to Lilly, Eli, and Company. Cephalosporin C derivatives. 3,843,642, Cl. 260-243.00c.
Jackson, Charles T.; and Vaughn, Roy O. Fishhook and trotline holder and dispenser. 3,842,530, Cl. 43-54.50a.
Jacobi, Ernst: *See*—
Schneider, Gerhart; Lust, Sigmund; Niethammer, Konrad; Jacobi, Ernst; Erdmann, Dietrich; and Mohr, Gunther, 3,843,714.
Jacobowsky, Armin: *See*—
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Jacobs, Edith Hope. End cervical contraceptive device. 3,842,827, Cl. 128-131.000.
Jacobs, Jacobus Hubertus: *See*—
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Jacobs, Lewis G.: *See*—
Swicklik, Leonard J.; and Jacobs, Lewis G., 3,843,817.
Jacobsen, Robert K. Plastic box. 3,842,974, Cl. 206-45.340.
Jacuzzi Research Inc.: *See*—
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Jacuzzi, Roy A.; and Kosta, Peter L., to Jacuzzi Research Inc. Hydromassage unit for tub mounting. 3,842,823, Cl. 128-66.000.
Jaeger, Peter: *See*—
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James, Ronald, to Wilkinson Sword Limited. Compositions containing a source of hypochlorite ions. 3,843,548, Cl. 25-187.00h.
James, William R.; and Hardy, Charles J., to Chesapeake and Ohio Railway Company, The and Baltimore and Ohio Railroad Company, The. Power assembly removal tool. 3,843,185, Cl. 294-67.0aa.
Jandrasi, Frank J.; and Purvis, Howard A., to Tapco International, Inc. Double disc seal valve. 3,842,861, Cl. 137-628.000.
Janis, Robert Gerald: *See*—
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Janssen, Paul Adriaan Jan: *See*—
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Soudijn, Willem; Van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, 3,843,635.
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Jason, John J.: *See*—
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Jasper Electronics Manufacturing Company: *See*—
Robinson, John W.; and Ross, Arthur W., 3,842,701.
Jaworski, Goerge: *See*—
Kent, Francis J.; and Jaworski, Goerge, 3,842,642.
Jaynes, Harry E. Boat mooring and guard device. 3,842,779, Cl. 114-230.000.
Jeffcoat, Keith: *See*—
Flavell, John; Jeffcoat, Keith; and Betts, Max William, 3,842,623.
Jefferson, Robin, to Ilford Limited. Gelatino silver halide emulsion layer containing a halogen substituted heterocyclic nitrogen compound, as hardner and cysteine, methionine or cystine as. 3,843,372, Cl. 96-109.000.
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Jensen, Ervin F.: *See*—
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Jensen, James W.; and Visnapuu, Aarne, to United States of America, Interior. Constrained layer damper and noise suppressor for a rock drill steel. 3,842,942, Cl. 181-33.00a.
Jerrold-Jones, Paul, to Beckman Instruments, Inc. Method of making internal half cell. 3,843,506, Cl. 204-195.00f.
Jessup, Wallace B., to Stebbins Engineering and Manufacturing Company, mesne. Glass fiber reinforced resin tank structures and method of fabricating. 3,843,429, Cl. 156-69.000.
Jeths, Johannes: *See*—
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Jiruse, Jaroslav, to Adamovske Strojirny, narodni podnik. Apparatus for the adjustment of paper sheets. 3,843,116, Cl. 271-183.000.
Johannsen, Hans Werner, to Braun Aktiengesellschaft. Storage magazine for diapositive slides. 3,843,246, Cl. 353-117.000.
Johansson, Karl Lennart Birger; and Wikholm, Karl Oskar, to Interwest General Corporation, mesne. Method of manufacturing sandwich elements. 3,843,486, Cl. 156-276.000.
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Johnson & Johnson: *See*—
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Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Guay, Normand D., 3,842,438.
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Johnson, Edward P.: *See*—
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Johnson, Elliott C., to Valley Honey Cooperative. Bee feeder. 3,842,457, Cl. 6-5.000.
Johnson, Homer R.: *See*—
Repik, Albert J.; Miller, Charles E.; and Johnson, Homer R., 3,843,559.
Johnson, Leonard F.: *See*—
Depuy, Arthur H.; Johnson, Leonard F.; and Scheinberg, Stanley, 3,842,491.
Johnson, Lorene M. Exercising method for reducing volume of human tissue in regions of the abdomen. 3,843,117, Cl. 272-57.00r.
Johnston, James R. Sandpaper holder block. 3,842,549, Cl. 51-392.000.

Johnston, Thomas E., to Du Pont de Nemours, E. I., and Company. Metal-deactivated organic compositions and process therefor. 3,843,536, Cl. 252-51.0sr.

Jolly, Jean: *See—*
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Joly, Robert: *See—*
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Jones, Charles Morgan: *See—*
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Jones, David Walter, to Howker Siddeley Aviation Limited. Window blinds, especially for aircraft passenger cabins. 3,842,889, Cl. 160-26.000.

Jones, Hal O.: *See—*
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Jones, James J., to Texas Instruments Incorporated. Acceleration and deceleration differentiator circuits for a vehicle skid control braking system. 3,843,208, Cl. 303-21.00r.

Jones, Richard Lloyd, III. Fence paint holder. 3,842,745, Cl. 104-93.000.

Jones, Roland P., to Cast Metal Industries, Inc. Vehicle holddown. 3,842,754, Cl. 105-368.00t.

Jones, Sterling B. Fresh water flush portable toilet. 3,842,445, Cl. 4-78.000.

Jordan, Raymond L.: *See—*
McKinney, Robert W.; Dixon, Andrew L., Jr.; and Jordan, Raymond L., 3,843,517.

Jorn, Raoul. Ball joint. 3,843,272, Cl. 403-132.000.

Jory, Howard R.; and Will, Charles H., Jr., to Varian Associates. Twisted microwave applicator. 3,843,860, Cl. 219-10.550.

Jose, Jean; Declaye, Joseph; Albert, Roger; and Bodart, Marcel, to Glaverbel-Mecaniver. Process and apparatus for determining the presence, in a given area of the edge of a sheet or of a ribbon of transparent material. 3,843,264, Cl. 356-199.000.

Joslin, Robert S.: *See—*
Diamond, Julius; Joslin, Robert S.; and Buehler, John D., 3,843,778.

Jouy, Marcel; and Coblentz, Michel, to Produits Chimiques Pechiney-Saint-Gobain. Catalyst for oxidation of O-xylene. 3,843,552, Cl. 252-432.000.

Jovic, Nikola Ljotic, to International Telephone and Telegraph Corporation. Multiple stage telecommunications switching network. 3,843,849, Cl. 179-18.0fg.

Joyce, James E. Stackable storage bin with interlock. 3,842,982, Cl. 211-126.000.

Joyce, John E. Rotors and rotor cores for continuous flow centrifuges. 3,843,045, Cl. 233-32.000.

Julian, Eric William. Tent. 3,843,190, Cl. 296-23.00r.

Jureiwicz, Arthur A. Tree stump splitting assembly. 3,842,871, Cl. 144-2.00n.

Juris, Andrew. Revolvable fireplace. 3,842,821, Cl. 126-125.000.

Kaake, Karl H.: *See—*
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Kabushiki Kaisha Daini Seikosha: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Taihei Seisakusho; a/k/a Taihei Machinery Works, Ltd.: *See—*
Noriuki, Nagaoka; and Haruo, Niimi, 3,842,874.

Kahn, Stuart L.; and Langbert, Carl G. Apparatus for recycling a fluid for use in a dental cuspidor. 3,842,448, Cl. 4-263.000.

Kaiser Aluminum & Chemical Corporation: *See—*
Sobolev, Igor; and Panusch, Erwin, 3,843,546.
Woods, Ralph A., 3,843,333.

Kaiser, Anthony J. Temporary implant and method for tendon surgery. 3,842,441, Cl. 3-1.000.

Kaiser, Carl; and Ross, Stephen T., to Smithkline Corporation. Pharmaceutical compositions comprising hydroxyphenyl-2-piperidinyl-carbinols. 3,843,794, Cl. 424-267.000.

Kalle Aktiengesellschaft: *See—*
Hoheisel, Klaus, 3,843,481.
Leibrecht, Klaus, 3,843,906.

Kambe, Osamu, to Toyo Umpanki Co., Ltd. Loading tool control apparatus for loading vehicles. 3,843,004, Cl. 214-763.000.

Kamerbeek, Djuurd Anne Geertruid; and Van de Water, Johannes Theodorus, to U.S. Philips Corporation. Method of providing conductor leads for a semiconductor body. 3,842,492, Cl. 29-588.000.

Kamiyoshi, Masaya; Gouda, Masatoshi; and Kuramoto, Naoya, to Teijin Limited. Method of bonding synthetic fibrous material to rubber using an aqueous dispersion-type adhesive. 3,843,484, Cl. 156-335.000.

Kamm, Artur: *See—*
Bielfeldt, Friedrich Bernd; and Kamm, Artur, 3,843,294.

Kamme, Carl Gustaf, to Aktiebolaget Leo (A/B Leo). Diagnostic method and means therefor. 3,843,776, Cl. 424-12.000.

Kamner, Haim J., to Goodman Equipment Corporation. Resiliently mounted swingable side plates for loading machines and the like. 3,842,964, Cl. 198-95.000.

Kamyr Inc.: *See—*
Laakso, Oliver A., 3,843,468.

Kanazawa, Yasunori, to Hitachi, Ltd. Color information reproducing system. 3,843,960, Cl. 358-61.000.

Kanebo, Ltd.: *See—*
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Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, 3,843,609.

Kaneko, Yasuhisa: *See—*
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Kangas, Donald; and Neuendorf, W. Robert, to Dow Chemical Company, The. Coacervation of anion-containing aqueous disperes systems with amphoteric polyelectrolytes. 3,843,585, Cl. 260-29.70n.

Kansai Paint Co., Ltd.: *See—*
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Kao Soap Co., Ltd.: *See—*
Masuda, Fumiya; Nakajima, Meiken; and Oyamada, Yukio, 3,843,781.

Kaplan, Michael; and Matthies, Dennis Lee, to RCA Corporation. Metallized video disc having an insulating layer thereon. 3,843,399, Cl. 117-217.000.

Kapoor, Subodh: *See—*
Cross, Christopher R.; and Kapoor, Subodh, 3,843,416.

Kappas, Nick. Cleaning solution. 3,843,544, Cl. 252-156.000.

Karcher, Thomas D.; and Hammond, Harry H., to Hansen Manufacturing Company, The. Cryogenic coupling assembly. 3,842,614, Cl. 62-56.000.

Karjala, Sulo A., to Wilson-Sinclair Co. Keratin polypeptide hydrolyzates as hair treating agents. 3,842,848, Cl. 132-7.000.

Karlson, Eskil L. Implantable linear motor prosthetic heart and control system therefor. 3,842,440, Cl. 3-1.000.

Karsch, Arthur Frederick: *See—*
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Kasai, Masanao: *See—*
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Kasazaki, Masayoshi: *See—*
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Kaspers, Helmut: *See—*
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Kasson, Gerald A.: *See—*
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Katayama, Hirohiko; Hanada, Hiroshi; and Kasai, Masanao, to Canon Kabushiki Kaisha. Photosensitive member. 3,843,394, Cl. 117-106.00a.

Katayama, Shitomi; Horikawa, Hideichi; and Masuda, Noboru, to Denki Onkyo Co., Ltd. Block copolymers having a polyhydrocargon-polyester main chain. 3,843,752, Cl. 260-873.000.

Katnack, Fredric Leroy, to RCA Corporation. Overlay transistor employing highly conductive semiconductor grid and method for making. 3,843,425, Cl. 148-187.000.

Kato, Hajime: *See—*
Ishige, Sadao; Hayashi, Takao; and Kato, Hajime, 3,843,383.

Kato, Jinichi; and Rikukawa, Katsuji, to Nippon Kogaku K.K. Light dissecting optical system. 3,843,227, Cl. 350-33.000.

Kato, Ryuichi: *See—*
Yanagida, Kisaku; Kato, Ryuichi; Suzuki, Tadao; and Takano, Yoshio, 3,843,436.

Kato, Toshitake, to Citizen Watch Company Limited. Calendar timepiece. 3,842,590, Cl. 58-58.000.

Katolicky, Jaroslav: *See—*
Sittek, Edvin; Katolicky, Jaroslav; Kuba, Jaroslav; and Dvorok, Edmund, 3,842,807.

Katsuda, Yoshio, to Dainippon Jochugiku Kabushiki Kaisha. Certain substituted furfurylesters of chrysanthemumic acid. 3,843,690, Cl. 260-347.400.

Katsuura, Tsuguo: *See—*
Matsunaga, Yoshiki; Itagaki, Takaharu; Kobayashi, Yoshimichi; and Katsuura, Tsuguo, 3,843,567.

Katz, Otto; and Kranich, Werner, to A. W. Faber-Castell. Clip attachment for writing instruments or the like. 3,842,466, Cl. 24-11.00f.

Kauderer, Friedrich. Stabilized oscillator. 3,843,936, Cl. 331-20.000.

Kaufman, John D.; Schiessl, Henry W.; and Csejka, David A., to Olin Corporation. Composition for accelerating oxygen removal comprised of an aqueous solution of hydrazine containing a mixture of an aryl amine compound and a quinone compound. 3,843,547, Cl.252-184.000.

Kauneckas, John J. Data recording system for photographic cameras. 3,843,956, Cl. 354-108.000.

Kawaguchi, Hiroshi; Konishi, Masataka; and Tomita, Koji, to Bristol-Myers Company. Oxamicetin and process for its production. 3,843,449, Cl. 195-96.000.

Kawano, Yoshiro: *See—*
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Kawase, Akira: *See—*
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Kay, Ian Trevor: *See—*

Baranyovits, Francis Leslie Charles; and Kay, Ian Trevor, 3,843,655.

Kaye, Wilbur I., to Beckman Insturments, Inc. Sample container for laser light scattering photometers. 3,843,268, Cl. 356-246.000.

KDI Corporation: *See*—
Hewlett, James A., 3,843,171.

Keating, John T.; and Simonian, John L., to Schenectady Chemicals, Inc. Polyamide-imide resins prepared from the reaction aromatic diisocyanates with mixtures of polycarboxylic acids and anhydrides. 3,843,587, Cl. 260-63.

Keehan, Donald J. Method for producing a reinforced resinous housing. 3,843,759, Cl. 264-135.000.

Keene Corporation: *See*—
Golland, Wesley A.; Mahoney, Eugene T.; and Minuk, Donald, 3,843,203.

Kehl, Lawrence Joseph; Janis, Robert Gerald; and Spaulding, Tedford Hollace, to Bunker-Ramo Corporation, The. Electrical contact and conductor, and method of making. 3,842,497, Cl. 29-628.000.

Keil, Joseph W., to Dow Chemical Company, The. Siloxane-modified epoxy resin compositions. 3,843,577, Cl. 260-291.1sb.

Keinanen, Sulo Paavo Johannes. Vehicle tire intended to be fitted with anti-skid devices and tire matrix for manufacturing same. 3,842,880, Cl. 152-210.000.

Kelch, Heinz. Taxi meter. 3,843,874, Cl. 235-45.000.

Keller, Wolfgang; Lugscheider, Walter; and Muehlbauer, Alfred, to Siemens Aktiengesellschaft. Apparatus for producing a radially uniform resistance characteristic in a semiconductor crystal by use of high frequency sonic vibrations. 3,843,331, Cl. 23-301.0p.

Kellner, Jordan D.: *See*—
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Kelly, Warner M.; and Fredd, John V., to Otis Engineering Corporation. Fire sufety valve. 3,842,853, Cl. 137-75.000.

Kelseaux, Ray M.; and Biles, Jerry W., to Cities Service Oil Company. Arctic islands. 3,842,607, Cl. 61-46.000.

Kemmetmueller, Roland, to American Waagner-Biro Company, Inc. Coal treating method and apparatus for coke plants. 3,843,458, Cl. 201-39.000.

Kemper, Kate. Apparatus for transporting a plurality of elements. 3,842,963, Cl. 198-31.0ac.

Kendall, Ronald R.; and Probst, Richard O., to Ransburg Electro-Coating Corporation. Powder apparatus. 3,843,054, Cl. 239-15.000.

Kenny, John; and Wilds, Alan. Long life implantable cardiac pacer generator and method of construction. 3,842,842, Cl. 128-419.00p.

Kensrue, Milo M. Automatic fillet and butt welding apparatus. 3,843,866, Cl. 219-124.000.

Kent, Cecil, to Creators Limited. Plastic trim strips. 3,843,475, Cl. 161-4.000.

Kent, Francis J., to Wean United, Inc. Positioning means and method for containers of a press. 3,842,641, Cl. 72-263.000.

Kent, Francis J.; and Jaworski, Goerge, to Wean United Inc. Driving means for containers of extrusion press. 3,842,642, Cl. 72-263.000.

Keogh, Patrick Joseph: *See*—
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Kerb, Ulrich; Wiechert, Rudolf; Eder, Ulrich; and Hans-Detlef, Berndt. 18-Nor-14-beta -pregnano-(13,14-F)-hexahydro-1,4-oxazepin-3 -ones. 3,843,631, Cl. 260-239.30p.

Kern, Rudolf: *See*—
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Kerr-McGee Chemical Corporation: *See*—
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Kersten, Hilde; and Meyer, Gerhard, to Akzo N.V. Process for the production of thiourea. 3,843,723, Cl. 260-552.00r.

Kessinger, Orville E., Jr.: *See*—
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., 3,842,475.

Keuston, Kevin Hague, to Australia, Commonwealth of, care of Department of the Army. Water sterilizing composition and tablets. 3,843,545, Cl. 252-181.000.

Kewanee Oil Company: *See*—
Malak, Thomas P., 3,843,495.

Key, Carroll L., Jr.; and Leschek, Walter C., to United States of America, Navy. Pressure release test device. 3,842,662, Cl. 73-67.100.

Key II Industries: *See*—
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Khaidukov, Gennady Fedorovich; Zamuraeva, Larisa Vasilievna; Kruglikov, Anatoly Abramovich; Potapov, Vladimir Petrovich; Smirnov, Jury Artemievich; and Bronov, Mark Vladimirovich. Process for producing esters of monohydric alcohols and carboxylic acids by sterification thereof and removal of acidic impurities from the resulting product. 3,843,697, Cl. 260-410.90r.

Khalafalla, Sanaa E.: *See*—
Reimers, George W.; and Khalafalla, Sanaa E., 3,843,540.

Kheifets, Rafail Efimovich: *See*—
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Khimenko, Lev Timofeevich: *See*—
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Kievits, Anton Arnoldus, to S.A. Bekaert. Body supporting frame structure. 3,842,452, Cl. 5-237.000.

Kikui, Keizo, to Mitsui Shipbuilding and Engineering Co., Ltd. Apparatus for lashing a pusher with a barge. 3,842,781, Cl. 114-230.000.

Kilker, Carl R.: *See*—
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Kim, Dong H.: *See*—
Santilli, Arthur A.; and Kim, Dong H., 3,843,645.

Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, to Kanebo Ltd. Terephthalamide poly bis (propoxy) alkylene. 3,843,609, Cl. 260-78.00r.

Kinder, David H., to MacDermid Incorporated. Chromate-free bright dip for zinc and cadimum surfaces. 3,843,430, Cl. 156-20.000.

Kinder, Floyd A., to United States of America, Navy. Remotely controlled mobile seagoing sensor platform. 3,842,774, Cl. 114-66.50h.

Kindlimann, Lynn E., to Allegheny Ludlum Industries, Inc. Composite article with a fastener of an austenitic alloy. 3,843,332, Cl. 29-183.000.

King, Dorothy Mary: *See*—
Lee, Charleston Roy; King, Dorothy Mary; and Calusen, Edward Einar, 3,843,827.

King, John A., to Cleveland Electronics, Inc. Fluid flow metering valve for internal combustion engine. 3,842,809, Cl. 123-32.0ae.

King, Kenneth Bryan, to Imperial Chemical Industries Limited. Method of forming extruder screw. 3,843,501, Cl. 204-129.650.

King, Robert E.; Massey, Wayne A.; and Smith, John M., to TRW Incorporated. Projectile trajectory correction system. 3,843,076, Cl. 244-3.160.

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Kinnroth, Samuel F.; and Friedman, Irving I. Shutter-blind device. 3,842,891, Cl. 160-35.000.

Kinnune, William P., Jr., to Western Kraft Corporation. Suspendible load spacer. 3,842,757, Cl. 105-486.000.

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Kiriu, Yoshihito; and Inoh, Hiroshi. Nib and writing instrument construction with capillary action. 3,843,270, Cl. 401-292.000.

Kirk, Geoffrey Eric: *See*—
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Kirkhof Manufacturing Corporation: *See*—
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Kirschner, Francis, to Soundcoat Co., Inc., The. Rotational vibration dampening assembly. 3,843,188, Cl. 295-7.000.

Kisaki, Hisashi; Mabuchi, Shunsuke; and Tsutsumi, Yukihiro, to Toyo Soda Manufacturing Co., Ltd. Method for producing 2-butene-1,4-diol. 3,843,733, Cl. 260-636.000.

Kishi, Yoshihiro, to Asahi Toy Company. Vehicle for a child. 3,842,928, Cl. 180-26.00r.

Kishpaugh, Allan; and Hagen, Donald J., to Standard Packaging Corporation. Granular package. 3,843,806, Cl. 426-106.000.

Kitamoto, Yoshiyuki; Tanaka, Makoto; and Yoshimura, Nobuya, to Bridgestone Tire Company Limited. Device for casting tires. 3,843,292, Cl. 425-242.000.

Kitaura, Mashio, to Minolta Camera Kabushiki Kaisha. Exposure correction factor setting indicator for cameras. 3,843,249, Cl. 354-60.000.

Klaus, Zahnert; and Hauptvogel, Jurgen, to VEBPENTACON DRESDEN Kamera-und Kinowerke. Central store for record supports. 3,843,221, Cl. 312-223.000.

Klebba, Horst, to Volkswagenwerk Aktiengesellschaft. Spring actuated lock for use with motor vehicle door. 3,843,175, Cl. 292-216.000.

Kleim, Schanzlin & Becker Aktiengesellschaft: *See*—
Holzenberger, Kurt; and Schiele, Otto, 3,842,522.

Klemp, Eldon J.; and Cassibo, Vernon E., to Litton Systems, Inc. Microwave oven door assembly. 3,843,859, Cl. 219-10.550.

Kleven, Lowell A., to Uniflo Systems Company. Proportional thrust control for levitated vehicles. 3,842,746, Cl. 104-147.00r.

Kloeckner-Werke AG: *See*—
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Klopp, John H.: *See*—
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Knell, Martin; and Brace, Neal O. 3-Perfluoroalkyl-1 propenes and process for producing. 3,843,735, Cl. 260-653.300.

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Knudson, Gary A. Method and apparatus for making building panels. 3,842,647, Cl. 72-377.000.

Kobayashi, Akira: *See*—

Yagi, Yoshiharu; Sato, Hiroshi; Narisawa, Shizuo; Yasui, Seimei; Kobayashi, Akira; Hino, Minoru; and Hata, Kazuhiko, 3,843,618.

Kobayashi, Ikuya; Noba, Motoi; and Fujimoto, Kiroaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Operation indicating device for hydraulic brake system. 3,843,892, Cl. 307-10.00r.

Kobayashi, Mitsuki: *See—*
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Koehring company: *See—*
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Kohner Bros. Inc.: *See—*
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Koike, Shoichi, to Nissan Motor Company, Limited. Window regulator mechanism for a vehicle. 3,842,541, Cl. 49-227.000.

Koinzan, Walter J. Direction control system with lever valve control. 3,843,058, Cl. 239-177.000.

Kojima, Togo; and Utashiro, Shinobu, to Tokyo Shibaura Electric Co., Ltd. Apparatus for automatic takeup and release of sheets. 3,843,114, Cl. 271-3.000.

Kolas, Walter A.: *See—*
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Kolbel, Reinhard, to National Research Development Corporation. Endoprosthetic shoulder joint. 3,842,442, Cl. 3-1.000.

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Komatsu, Akitoshi: *See—*
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Konishi, Masataka: *See—*
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Konishi, Motoyasu. Helical elements for a line conductor. 3,842,467, Cl. 24-131.00c.

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Korell, Donald D., to Steelcase Inc. Partition connector system. 3,842,555, Cl. 52-238.000.

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Korpics, Charles J., to Sherwin-Williams Company, The. Benztriazole and tolyltriazole mixtures. 3,843,337, Cl. 44-63.000.

Korr, Abraham L.; Mahoney, James F.; and Svihel, Bernard T. Apparatus and package for use in heating or cooking of food by electrical conduction through the food. 3,842,724, Cl. 99-358.000.

Korting, Reinhard, to Polysius AG. Traveling grate. 3,842,763, Cl. 110-40.00c.

Kosaka, Tomoaki, to Pioneer Electronic Corporation. Noise reduction device of a tape recorder. 3,843,573, Cl. 260-25.000.

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Kouremenos, Demetre, to Sarlab Aktiengesellschaft. Absorption refrigeration apparatus fo the inert gas type. 3,842,618, Cl. 62-490.000.

Koyama, Keizi: *See—*
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Kozacka, Frederick J., to Chase-Shawmut Company, The. High-voltage fuse. 3,843,948, Cl. 337-158.000.

Kozhevnikov, Sergei Nikolaevich; Tkachenko, Arkady Semenovich; Murash, Igor Vasilievich; and Shvedchenko, Anton Antonovich. Rolls driving gear for the stand of pipe cold-rolling mill. 3,842,636, Cl. 72-208.000.

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Kozu, Isao, to Matsushita Electric Industrial Co., Ltd. Announcing device for use with a measuring apparatus. 3,843,963, Cl. 360-12.000.

Kraft, Wolfgang, to ITT Industries, Inc. Method of manufacturing a thermocompression contact. 3,843,428, Cl. 156-7.000.

Kramer, James H., to Goodrich, B. F., Company, The. Perforate article and method of making same. 3,843,476, Cl. 161-112.000.

Kramer, Leonard; and Happel, John. Controlling coke in the prolysis of hydrocarbons tl acetylene and hydrogen. 3,843,744, Cl. 260-679.000.

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Kravitz, Stanley; Estes, John H.; and Suggitt Robert M., to Texaco Inc. Inomerization of C_{10}-C_{14} hydrocarbons with fluorided metal-alumina catalyst. 3,843,746, Cl. 260-683.680.

Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Isomerization of c10-c14 hydrocarbons with fluorided metal-alumina catalyst. 3,843,747, Cl. 260-683.680.

Krawczak, Lawrence: *See—*
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Krazanoski, Joseph Z.; and Petricciani, John C., to Flow Pharmaceuticals, Inc. Eye solution and method of using same. 3,843,782, Cl. 424-78.000.

Kreider, Eunice M., to Searle, G. D., & Co. Pyridyl esters of 1-(3-cyano-3,3 diphenylpropyl)-4-phenylpiperidine-4-carboxylic acid. 3,843,646, Cl. 260-293.690.

Kreiss, Bernhard: *See—*
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Krenke, Vincent G., to Koppers Company, Inc. System and method for controlling emissions while pushing coke from a coke oven. 3,843,459, Cl. 201-41.000.

Kressley, Leonard J.: *See—*
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Krohm, Reinold: *See—*
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Kroll, Raymond A., to Outboard Marine Corporation. Reversible transmission. 3,842,788, Cl. 115-34.00r.

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Kroon, William L., to Ampex Corporation. Magnetic head. 3,843,968, Cl. 360-121.000.

Krueger, Archie S.; Slye, Norman J.; and Diring, James A., to Alwin Manufacturing Company, Inc. Roll towel dispenser. 3,843,218, Cl. 312-38.000.

Kruglikov, Anatoly Abramovich: *See—*
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Kruh, Daniel, to General Electric Company. Soluble amide-imide polymers terminated with olefin groups. 3,843,602, Cl. 260-47.0cp.

Krupick, Walter J.; and McDonough, Theodore J., to Singer Company, The. Vibration and shock isolated gyroscope assembly. 3,843,108, Cl. 267-137.000.

Kuba, Jaroslav: *See—*

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Kuhn, Howard A., to Gleason Works, The. Process and apparatus for densifying powder metal compact to form a gear having a hub portion, and preferred powder metal compact shape for use therewith. 3,842,646, Cl. 72-354.000.

Kuhn, Karl Walter, to Societe d'Etudes de Machines Thermiques. Flat sealing joint forming in particular a cylinder head gasket for an internal-combustion reciprocating-piston engine. 3,843,141, Cl. 277-209.000.

Kuhnert, Peter; and Luetz-Binder, Doris, to Benckiser, Joh. A., GmbH. Concentrated stable solutions of solid edible acids, process of making, and method of using same. 3,843,812, Cl. 426-213.000.

Kukolja, Stjepan P.; and Lammert, Steven R., to Lilly, Eli, and Company. 2-Chlorosulfinyl-3-imido-azetedin-4-ones. 3,843,682, Cl. 260-326.00s.

Kumai, Akira; and Usami, Toshimasa, to Fuji Photo Film Co., Ltd. Multi-layer color photographic light-sensitive materials. 3,843,369, Cl. 96-74.000.

Kunkle, Gerald E.: *See*—
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Kupec, Peter; and Rauterberg, Ulf, to Siemens Aktiengesellschaft. Electromagnetic relay and free armature therefor. 3,843,944, Cl. 335-196.000.

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Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Bis-p-dithino(2,3-b: 2',3'-e)pyrazine 2,3,7,8-tetracarbonitrile. 3,843,644, Cl. 260-250.0bc.

Kurose, Hisayuki; Kawase, Akira; Aoyagi, Kazuo; and Uchiyama, Noboru, to Ishikawajima-Hariman Jukogyo Kabushiki Kaisha. Hull construction method employing hull construction work units. 3,842,773, Cl. 114-65.00r.

Kurtis, Soma; Argabright, Perry A.; and Presley, C. Travis, to Marathon Oil Company. Gels for protecting metal structures. 3,843,374, Cl. 106-14.000.

Kurz, Arthur W., Jr., to Donnelly Mirrors, Inc. Shatter-resistant mirror mounting. 3,843,236, Cl. 350-288.000.

Kushner, Marlene. Magnetic supporting means. 3,842,980, Cl. 211-60.00t.

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Kwan, Philip Henry, to Key II Industries. Scale inhibiting apparatus. 3,843,507, Cl. 204-302.000.

Kyker, Gary Stephen; Beckman, Joseph Alfred; Halasa, Adel Farhan; and Hall, James Edward, to Firestone Tire & Rubber Company, The. Stabilized phosphonitrile elastomers. 3,843,596, Cl. 260-45.75r.

Kyowa Leather Cloth Co., Ltd.: *See*—
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La Chance, Gerard B. Electronic training & diagnosing apparatus. 3,842,517, Cl. 35-19.00a.

Laakso, Oliver A., to Kamyr Inc. Method and apparatus of a two zoned, liquid level controlled screening and feeding device for cellulose digestion. 3,843,468, Cl. 162-17.000.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Thermoset molding powders employing glycidyl methacrylate-functional prepolymers and diphenol-expoxy resin adducts and molding thereof. 3,843,594, Cl. 260-42.180.

Laboratories Laroche Navarron: *See*—
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Labronic, AG: *See*—
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Borel, Joseph; Deutsch, Jean-Claude; Labrunie, Guy; and Robert, Jacques, 3,843,231.

Lacerte, Maurice. Solid tire wheel. 3,843,202, Cl. 301-63.0pw.

Lachmann, Burkhard; and Rosenkranz, Hans Jurgen, to Bayer Aktiengesellschaft. Process for the production of 2,4-dihydroxybenzophenone. 3,843,729, Cl. 260-591.000.

Lachowicz, Donald R.; and Kreuz, Kenneth L., to Texaco, Inc. Novel oxiranes and their preparation. 3,843,693, Cl. 260-348.00r.

Lack, James E. Water guns and water emitting target. 3,843,127, Cl. 273-101.000.

Lafond, Robert L.: *See*—
Campbell, John Scott; Fairchild, John L.; Lafond, Robert L.; and Kilker, Carl R., 3,843,839.

Laftsidis, Stergios: *See*—
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,843,820.
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,843,821.

Lahr, Gerald J. Method of growing plants hydroponically. 3,842,535, Cl. 47-1.200.

Laing, James Morrison, to Borg-Warner Limited. Method of making planetary carrier assembly. 3,842,481, Cl. 29-434.000.

Lambert, Emmanuel: *See*—
Toussaint, Francois; Laroche, Pierre; Schottey, Jean; and Lambert, Emmanuel, 3,843,472.

Lambert, Thomas H. Apparatus for removably holding a liquid beverage container. 3,842,981, Cl. 211-74.000.

Lambiris, Sortiris, to General Electric Company. Liquid fuel grid burner for vitiated air using auxiliary combustion air. 3,843,309, Cl. 431-284.000.

Lamcor Incorporated: *See*—
Melugin, Simeon A., 3,843,050.

Lammert, Steven R.: *See*—
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Lane, Bruce M.: *See*—
Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., 3,843,894.

Lane, Ralph David: *See*—
Hansen, Aage Ansgar; and Lane, Ralph David, 3,843,954.

Lang, Douglas R.; and Hight, Graeme K. Marker for use in the detection of oestrus in animals. 3,842,802, Cl. 119-1.000.

Lang, Thomas G., to United States of America, Navy. Semisubmerged ship with bow impact alleviator. 3,842,772, Cl. 114-61.000.

Langbert, Carl G.: *See*—
Kahn, Stuart L.; and Langbert, Carl G., 3,842,448.

Langejan, Arend. Preparation of active dried baker's yeast. 3,843,800, Cl. 426-18.000.

Lapidus, Herbert, to Combe Incorporated. Deodorizer sheet material. 3,842,519, Cl. 36-44.000.

Large, John; Moss, James; and Dutton, David. Processing of wires. 3,842,643, Cl. 72-286.000.

Laroche, Pierre: *See*—
Toussaint, Francois; Laroche, Pierre; Schottey, Jean; and Lambert, Emmanuel, 3,843,472.

Larry, John Robert, to Du Pont de Nemours, E. I., and Company. Novel conductive metallizations. 3,843,350, Cl. 75-.50r.

Larsem, Veggo F., Co., The: *See*—
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Larsen, Dorwin R.: *See*—
Gutman, Nathan; Larsen, Dorwin R.; and Volle, Everette M., 3,843,274.

Larsh, Everett P. Marine vessel roll stabilizer apparatus. 3,842,777, Cl. 114-126.000.

Larson, Ray W.; Morsell, Arthur Lee; Muntz, Eric P.; and Wilkowsky, Murray, to Xonics, Inc. Electron radiogram developer with image field screen. 3,842,801, Cl. 118-638.000.

Laszlo, Tibor S., to Philip Morris Incorporated. Microwave expansion of tobacco. 3,842,846, Cl. 131-140.00p.

Latash, Jury Vadimovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; and Baglai, Vitaly Mikhailovich, 3,842,897.
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Latter, Charles Franklin: *See*—
Fagin, Earle Reid; and Latter, Charles Franklin, 3,842,922.

Lau, Gunther; Bradatsche, Edmond; and Brandl, Hermann J. Sealing and transport means for corrugated paperboard impregnating apparatus. 3,842,795, Cl. 118-50.000.

Lautier, Alex Honore: *See*—
Pierret, Jean-Marc; Lautier, Alex Honore; Maddens, Francis Paul; and Nussbaumer, Henri Jean, 3,843,942.

Laxson, Thomas Earl. Chuck adapter. 3,843,143, Cl. 279-1.00a.

Layton, James K.; and Magnuson, Gustav D., to United States of America, Air Force. High intensity proton source. 3,843,889, Cl. 250-423.000.

Lazarev, Leonid Lazarevich; Novakovsky, Leonid Grigorievich; and Roitman, Boris Aronovich. Method to diagnosing head lamps of transport vehicles and a device for carrying same into effect. 3,843,262, Cl. 356-121.000.

Lee, Charleston Roy; King, Dorothy Mary; and Calusen, Edward Einar, to General Foods Corporation. Process for baking foodstuffs. 3,843,827, Cl. 426-293.000.

Lee, Raymond, Organization, Inc., The: *See*—
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Lee, Thomas E.: *See*—
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Leek, Wayne E.: *See*—

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Leesona Corporation: *See*—
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Lefebvre, Michel S. Process for coating a support with a polyamide plastic material. 3,843,387, Cl. 117-62.200.

Legue, Ronald: *See*—
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Legutke, Gunter: *See*—
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Lehman, Michael T., to Itek Corporation. Photographic developer with cuprous amine complex. 3,843,363, Cl. 96-48.00r.

Lehmann, Gerard: *See*—
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Leibrecht, Klaus, to Kalle Aktiengesellschaft. Method of reducing the generation of ozone. 3,843,906, Cl. 317-4.000.

Leitner, Michael: *See*—
Plough, Charles T.; Arts, Marcus; Leitner, Michael; Russel, William; Marsman, Frank; and Eastwood, Keith, 3,843,949.

Lemiuex, Raymond Urgel: *See*—
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Leonard, Verna M. Chord inversion finder. 3,842,707, Cl. 84-474.000.

Leonard, Verna M. Keyboard Fingering guide. 3,842,708, Cl. 84-485.000.

Leotta, Anthony D.: *See*—
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Les Forges de Zeebrugge S.A.: *See*—
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Leslie, William C., to United States Steel Corporation. Method of producing enameling iron, and enameling iron compositions and articles. 3,843,415, Cl. 148-2.000.

Leuck, Donald D.; and Budzynski, Leonard M., to Owens-Illinois, Inc. Border sustainer system for gas discharge panel. 3,843,905, Cl. 315-169.0tv.

Leuthi, Christian, to Ciba-Geigy AG. Pyrenyl-s-triazines. 3,843,651, Cl. 260-248.0cs.

Leuthi, Christian; Biland, Hans Rudolf; and Duennenberger, Max, to Ciba Limited. Bis-oxalic acid ester amides for use as stabilisers. 3,843,716, Cl. 260-471.00a.

Leuthi, Christian, to Ciba-Geigy AG. 1,4-Bis-styryl-benzene-dioxyalkanoic acids, salts and esters. 3,843,718, Cl. 260-473.00g.

Lever Brothers Company: *See*—
Davies, James Francis; Gauterin, Charles Rowland; and Neillie, William Frederick Soutar, 3,843,563.

Levinson, Harold N.; and Frank, Jan. Dysmetric dyslexia screening procedure. 3,842,822, Cl. 128-2.00r.

Lewandowsky, Klaus, to Walker, Kurt, Dr. Device for severing a preferably moistened tissue web. 3,843,034, Cl. 225-43.000.

Lewelling, James D.: *See*—
Bondie, Dale J.; Sutton, Robert S.; and Lewelling, James D., 3,842,712.

Lewis, Donald J., to Allied Chemical Corporation. Particle engaging screen device for pyro-technic system. 3,843,151, Cl. 280-150.0ab.

Lewis, Gary K.: *See*—
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Libis, Bernard: *See*—
Habicht, Ernst; Libis, Bernard; and Zergenyi, Janos, 3,843,797.

Lichtenstein, Berhard, to Technicon Instruments Corporation. Method and apparatus for successive sample analysis without inter-sample contamination. 3,843,326, Cl. 23-259.000.

Licitis, Gunars; and Glass, Marvin I., to Glass, Marvin, & Associates. Target game. 3,843,128, Cl. 273-102.001.

Lidington, Frederick Charles, to Weathershields Limited. Hinged draught deflectors for vehicles. 3,843,195, Cl. 296-137.00j.

Liechti, Hans Wilhelm: *See*—
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Liedtke, Kurt Willy: *See*—
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Lightfoot, Cecil W.: *See*—
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Likhite, Vilas V. Membrane separation process. 3,843,444, Cl. 195-66.00r.

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Jackson, Billy G.; Stamper, Martha C.; and Bottorff, Edmond M., 3,843,642.
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Lindsey, Hiram E., Jr. Method and apparatus for deep gas well completions. 3,842,912, Cl. 166-307.000.

Ling, Manfred, to Triumph Werke Nuerberg A.G. Shift mechanism. 3,842,958, Cl. 197-18.000.

Lion Fat and Oil Co., Ltd.: *See*—
Susuki, Rinnousuke; Hoshi, Hiroshi; Araki, Shinichi; Miyamoto, Shinzo; and Ishii, Masao, 3,843,037.

Lippay, Raymond R.; and Kolas, Walter A. Circulation of lubricant of an internal combustion engine prior to start-up. 3,842,937, Cl. 184-6.300.

Lippke, Paul. Device for checking moving webs of paper or the like, relative to flows. 3,842,668, Cl. 73-159.000.

Little, Arthur D., Inc.: *See*—
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Littlewood Arnold; deceased (by Littlewood, Esther; person representative). Opacimeters. 3,843,266, Cl. 356-207.000.

Littlewood, Esther: *See*—
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Litton Systems, Inc.: *See*—
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LKB-Produkter AB: *See*—
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Lockard, Joseph L., to AMP Incorporated. Multiple position slide switch assembly with auxiliary switch deactivated by controller in extreme position. 3,843,852, Cl. 200-16.00d.

Locke, Frank W., to Hoerner Waldorf Corporation. Easily set-up container. 3,843,040, Cl. 229-38.000.

Logan, James D.: *See*—
Talbott, John W.; and Logan, James D., 3,843,756.

Logemann, Heino; Suling, Carlhans; and Lorenz, Gunter, to Bayer Aktiengesellschaft. Solutions of N-vinyl pyrrolidone copolymers. 3,843,578, Cl. 260-29.0an.

Loiseau, Gerard Paul Marie Henri: *See*—
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Longley, Delton K. Apparatus for oxidizing waste materials. 3,843,329, Cl. 23-277.00c.

Loo, Villo Johannesovich: *See*—
Sillaots, Argo Aleksandrovich; Kuuse, Nikolai Ivanovich; Randmaa, Toenu Romanovich; and Loo, Villo Johannesovich, 3,842,465.

Loose, Randy J.; and Spector, George. Game having magnetically cooperating projectiles and floating scoring elements. 3,843,125, Cl. 273-95.00r.

Lopata, Karl Peter; and Schiffer, Gunter Heinz, to Fa. Kleinewefers Industrie-Companie GmbH. Sealing apparatus for gas vapor container subjected to above or below atmospheric pressures for product webs to be continuously treated. 3,843,142, Cl. 277-237.000

Lorenz, Gunter: *See*—
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Low, Garth R. Firearm with exchangeable barrels. 3,842,527, Cl. 42-75.00b.

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Lozier, Leroy P. Bicycle transmission. 3,842,684, Cl. 74-217.00b.

Lucas Electrical Company Limited, The: *See*—
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Lucas, Joseph, (Industries) Limited: *See*—
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Luce, Nunzio A.; and Graham, George A., to Optel Corporation. Electronic timpeieces. 3,842,589, Cl. 58-50.00r.

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Lutz, Albert William; and Feeny, Richard William, to American Cyanamid Company. Use of 6-(trifluoromethyl) hydrouracils as herbicides. 3,843,348, Cl. 71-92.000.

Maagdenberg, Ronald R. Catalytic process for depositing nitride films. 3,843,398, Cl. 117-201.000.

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Macalus, Frank: *See*—

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MacDonald, John MacKillop; and Hong, Charles Chuan-Chi, to Esso Research and Engineering Company. Countercurrent lube extraction with dual solvent system. 3,843,515, Cl. 208-326.000.
MacDonald, William; and Pan, Chuen-Yong, to Alberta Helium Limited, mesne. Method for drying water-wet membranes. 3,842,515, Cl. 34-9.000.
Maciag, Edmund T., to Vernitron Corporation. Piezoelectric mounting with variable damping. 3,843,898, Cl. 310-8.200.
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Maistre, Michel Antoine Jules. Cellular flotation structure. 3,842,768, Cl. 114-16.00r.
Mako, John: *See*—
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Malak, Thomas P., to Kewanee Oil Company. Corrosion resistance of decorative chromium electroplated objects. 3,843,495, Cl. 204-35.00r.
Malchow, William A. Bolted connection including a stud. 3,842,718, Cl. 92-171.000.
Maley, Gerald A.; and Riseman, Jacob, to International Business Machines Corporation. Apparatus for controlling functionally severable parts of a computer system. 3,843,953, Cl. 340-172.500.
Malis, Leonard Irving; and Macalus, Frank. Rongeur. 3,842,839, Cl. 128-312.000.
Mallory Electric Corporation: *See*—
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Mallory, Marion, Jr., to Mallory Electric Corporation. Capacitive discharge ignition system. 3,842,817, Cl. 123-148.00e.
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Manowitz, Milton; Sharpell, Frederick H., Jr.; and Stegmann, Carolyn, to Givaudan Corporation. Inhibiting growth of microorganisms in aqueous systems. 3,843,519, Cl. 210-64.000.
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Marcus, Ernst. Four-cycle internal combustion engine without a camshaft. 3,842,812, Cl. 123-75.0rc.
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Marlow, Jerry R., to General Motors Corporation. Hydromechanical transmission and control. 3,842,694, Cl. 74-867.000.
Maroschak, Ernest J., to Plastic Tubing, Inc. Method for making and slitting plastic corrugated tubes. 3,843,758, Cl. 264-40.000.
Marshall, Philip; and Stevens, William C., Jr., to Marshall Research and Development Corporation. Shock spectrum analysis method and apparatus. 3,842,661, Cl. 73-67.100.
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Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich. Method for measuring parameters of complex electric circuit components and device for effecting same. 3,843,925, Cl. 324-57.00.
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Massi, Giovanni. Combustion control device. 3,843,310, Cl. 431-90.000.
Masson, Yves; and Greiner, Henri, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Radial-ply tires. 3,842,883, Cl. 152-354.000.
Masuda, Fumiya; Nakajima, Meiken; and Oyamada, Yukio, to Kao Soap Co., Ltd. Smell-sweetening and deodorizing maleimides. 3,843,781, Cl. 424-76.000.
Masuda, Noboru: *See*—
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Matsumoto, Shoji; Yonaha, Noboru; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Transfer process in electrography. 3,843,381, Cl. 117-17.500.
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Matsunami, Koichi; and Hayashi, Ikuya, to Toyo Boseki Kabushiki Kaisha. Composite film. 3,843,479, Cl. 161-165.000.
Matsuo, Masatoshi; Sakaguchi, Tadao; and Akamatsu, Takashi, to Sumitomo Chemical Company, Ltd. Optical brightening agents of oxazolyl derivatives. 3,843,632, Cl. 260-240.0ca.
Matsuoka, Takeji. Apparatus for making coiled springs. 3,842,634, Cl. 72-142.000.
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Muller, Anton; Konig, Hubert; and Strobel, Ludwig, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Tire chain. 3,842,881, Cl. 152-213.00a.
Muller, Erich: *See—*
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Muller, Rolf: *See—*
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Muller, Willy. Remote rewind control system. 3,843,842, Cl. 179-6.00e.
Mulvany, Richard Burke, to International Business Machines Corporation. Storage system having a universal disk drive and a family of data modules. 3,843,967, Cl. 360-98.000.
Mumme, Clarence D., to Sperry Rand Corporation. Angular rate sensor. 3,842,681, Cl. 73-505.000.
Munakata, Yukio, to Pioneer Electronic Corporation. Magnetic tape recording and reproducing apparatus. 3,843,966, Cl. 360-74.000.
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Murata, Yoshiaki. Ships lines. 3,842,771, Cl. 114-56.000.
Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing a porous material of polytetrafluoroethylene. 3,843,570, Cl. 260-2.50m.
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Nayder, Benjamin E., to Western Electric Company, [illegible]corporated. Method of continuously regenerating and recycling a sp[illegible]e etching solution. 3,843,504, Cl. 204-82.000.
Nebzydoski, John W.; and Patmore, Edwin L., to Texaco Inc. Synthetic aircraft turbine oil. 3,843,531, Cl. 252-34.700.
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Neumann, Ulrich, to Chemiebau Dr. A. Zieren GmbH & Co., KG. Process for the preparation of sodium carbonate monohydrate from a sodium hydroxide solution preduced according to the diaphragm process. 3,843,768, Cl. 423-190.000.
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Nickl, Josef; Muller, Erich; Barr, Berthold; and Roch, Josef, to Boehringer Ingelheim GmbH. 2,4-Diamino-substituted pyrido(3,2-d) pyrimidines and salts thereof. 3,843,638, Cl. 260-243.00r.
Niebykski, Leonard M.; Jarema, Chester P.; and Lee, Thomas E., to Ethyl Corporation. Preparation of metal foams of aluminum. 3,843,353, Cl. 75-20.00f.
Niedzielski, Edmund Luke, to Du Pont de Nemours, E. I., and Company. Liquid oil-soluble non-crystallizing mixtures of zinc salts of dialkyl dithiophosphates. 3,843,530, Cl. 252-32.70e.
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Ogle, Robert Walter, to IMS Limited. Neb-U-pack. 3,842,833, Cl. 128-194.000.
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Okamoto, Shimaji; and Ishii, Tsutomu, to Nippon Gakki Seizo Kabushiki Kaisha. Expression control of electronic musical instrument. 3,842,703, Cl. 84-1.270.
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Pad, Mohammed Reza. Oscillating furniture and playthings. 3,842,450, Cl. 5-109.000.
Palitex Project-Company GmbH: *See—*
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Panson, Armand J.; and Ruka, Roswell J., to Westinghouse Electric Corporation. Preparation of alkaline earth metal halophosphate phosphors. 3,843,556, Cl. 252-301.60p.
Panusch, Erwin: *See—*
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Paola, Carl Ralph, to Bell Telephone Laboratories, Incorporated. Fixture for lapping and polishing semiconductor wafers. 3,842,544, Cl. 51-129.000.
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Paramore, Edwin L.; and Howe, Tom W., to Halliburton Company. Well bore cleaner construction. 3,842,906, Cl. 166-172.000.
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Parkinson, Robert E., to United States Steel Corporation. Aqueous coating compositions of ethylene/acrylic acid copolymer and phenolic resin. 3,843,576, Cl. 260-29.300.
Parlee Anderson Corporation: *See—*
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Parlee, Norman A.: *See—*
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Parsons, Joseph R.; and Rechter, Harold L., to Chicago Fire Brick Company. Refractory composition and shaped article containing carbon and silicon. 3,842,760, Cl. 106-56.000.
Partridge, Harold deVere; and Hildyard, Joseph M., to Hooker Chemical Corporation. Process for removing hexavalent chromium from chlorate containing from chlorate containing liquors. 3,843,769, Cl. 423-475.000.
Parva, Ashby: *See—*
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; and Baglai, Vitaly Mikhailovich. Apparatus for electroslag remelting of metals and alloys. 3,842,897, Cl. 164-252.000.
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich. Apparatus for electroslag remelting. 3,842,898, Cl. 164-252.000.
Patz, Paul. Overhead feeder conveyor having double-tapered bed, reversibly drivable chain flite assembly. 3,842,805, Cl. 119-52.00b.
Pavlov, Leonid Viktorovich: *See—*
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.
Payne, Harold J. W., to Robertson, H. H., Company. Glass-fiber-reinforced gypsum roof deck. 3,842,559, Cl. 52-309.000.
Payne, Thomas F., to Anaconda Company, The. Recovery of aluminum fluoride. 3,843,498, Cl. 204-67.000.
Pazer, Jerome; and Bach, Michael C., to Instrument Systems Corporation. Remotely programmable lock. 3,842,629, Cl. 70-264.000.
Peabody Coal Company: *See—*
Willis, Earl C.; and Gothard, Ramon A., 3,842,610.
Pear, Charles B., Jr., to Potter Instrument Company, Inc. Helical bar strip chart recorder. 3,843,955, Cl. 346-35.000.
Pearson, Dale S.; and Shurpik, Anton, to Firestone Tire & Rubber Co., The. Promoters for radiation induced cross-linking in polymer substances. 3,843,502, Cl. 204-159.180.
Pechiney Ugine Kuhlmann: *See—*
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Perkins, Don V., to Uniroyal, Inc. Cure of rubber with trihaloisocyanuric acid. 3,843,487, Cl. 156-334.000.
Perricone, Alphonse C.; Young, Homer F.; Bettge, George W.; and Enright, Dorothy P., to Milchem Incorporated. Process for the inhibition of swelling of shale in aqueous alkaline medium. 3,843,524, Cl. 252-1.000.
Perry, Clark William, to Hoffmann-La Roche Inc. Racemic-diketo compounds. 3,843,728, Cl. 260-590.000.
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Perry, Walter Merton. Container with attached closure. 3,843,011, Cl. 220-47.000.
Person, Tage, to LKB-Produkter AB. Apparatus for periodical parallel displacement of at least one parallel beam. 3,843,226, Cl. 350-6.000.
Persson, Rolf: *See—*
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Christman, Harold F.; and Teel, Paul H., 3,843,745.
Petros, Andrew J., to Mesta Machine Company. Side-shifting mill roll. 3,842,639, Cl. 72-239.000.
Petzetakis, Aristovoulos G. Apparatus for making thermoplastic pipe coupling parts. 3,843,302, Cl. 425-388.000.
Pews, R. Garth; and Gunsher, Jeffery A., to Dow Chemical Company, The. Tris-(polyhalophenoxy)-s-triazine. 3,843,650, Cl. 260-248.0cs.
Pfaffle, Ernst, to Sickinger, Hans, Company. Sheet pile feeding device. 3,842,965, Cl. 198-103.000.
Pfizer Inc.: *See—*
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Hetzel, Donald S., 3,843,704.
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Phillips, Bobby M.; and Jones, Hal O., to Eastman Kodak Company. Fluid layering assembly for attachment to a jet or spinneret for production of side-by-side and sheath-core fibers. 3,843,098, Cl. 259-4.000.
Phillips, John R., to Occidental Petroleum Corporation. Hot ball desalination process. 3,843,462, Cl. 203-11.000.
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Cobb, Raymond L., 3,843,726.
Gabriel, Henry, 3,843,438.
Mathis, Ronald D.; and Dix, James S., 3,843,595.
Solomon, Paul W., 3,843,732.
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Piatkowski, Paul; and Birkholz, Manfred, to Maschinenfabrik Buckau R. Wolf AG. Vibratory compacting roller. 3,843,275, Cl. 404-117.000.
Picha, Donald A., to International Harvester Company. Forage blower housing. 3,843,280, Cl. 415-219.00c.
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Piedarski, Gottfried; and Hundmeyer, Anton, to Wacker Chemie GmbH. Process for the production of polyethylene powder having a high density and high tap density. 3,843,620, Cl. 260-94.90c.
Piepho, Donald A., to Caterpillar Tractor Company. Adjustable track roller assembly. 3,843,214, Cl. 305-14.000.
Pierre, Jean: *See—*
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Pierret, Jean-Marc; Lautier, Alex Honore; Maddens, Francis Paul; and Nussbaumer, Henri Jean, to International Business Machines Corporation. Equalizer for phase modulation communication systems using the instantaneous signal amplitude weighted by signal enelope amplitude distortion. 3,843,942, Cl. 333-18.000.

Pifferi, Giorgio, to I.S.F., S.p.A. Method for the preparation of derivatives of 5-hydroxy-2-carboxychromone. 3,843,687, Cl. 260-345.200.

Pihlgren, Carl O. Boat and trailer loading device. 3,843,002, Cl. 214-450.000.

Piller, Bernhard; Meier, Max; Dunnenberger, Max; Biland, Hans Rudolf; and Luthi, Christian, to Ciba-Geigy AG. Photographic material stabilised against the deleterious effects of ultraviolet radiation. 3,843,371, Cl. 96-84.00r.

Pingaud, Bernard-Jean, to Eastman Kodak Company. Process for producing fine acicular gamma ferric oxide crystals. 3,843,773, Cl. 423-634.000.

Pinhas, Henri, to Laboratories Laroche Navarron. 4[2-(α-methylphenethylamino)-ethoxy]-benzenes. 3,843,725, Cl. 260-570.700.

Pinsly, Jules; and Salame, Morris, to Monsanto Company. Plastic container. 3,843,754, Cl. 260-890.000.

Pioneer Electronic Corporation: *See—*
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Pioneer Natural Gas Company: *See—*
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Piper Aircraft Corporation: *See—*
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Pipitone, Joseph. Compact portable toothbrush. 3,842,851, Cl. 132-84.000.

Piro, Mario; Rivola, Luigi; and Notari, Bruno, to Snam Progetti S.p.A. Process for the preparation of silver base catalysts. 3,843,491, Cl. 204-10.000.

Pisarevsky, Jury Vladimirovich: *See—*
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Plastic Tubing, Inc.: *See—*
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Plough, Charles T.; Arts, Marcus; Leitner, Michael; Russel, William; Marsman, Frank; and Eastwood, Keith. Electrical relay. 3,843,949, Cl. 338-23.000.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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Podkletnov, Evgeny Nikolaevich. Apparatus for the application of liquid corrosion-preventive compound to the inner surface of pipes. 3,842,799, Cl. 118-408.000.

Polhall, Karl Olof; and Persson, Rolf, to Morgardshammor Aktiebolag. Composite roll. 3,842,471, Cl. 29-125.000.

Poly Wide, Inc.: *See—*
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Polysius AG: *See—*
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Porelon, Inc.: *See—*
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Porret, Daniel, to Ciba-Geigy Corporation. Digbycidylbenzimidazolones. 3,843,674, Cl. 260-309.200.

Porret, Daniel; and Stockinger, Friedrich, to Ciba-Geigy Corporation. N-Heterocyclic polyglycidyl compounds containing ester groups. 3,843,675, Cl. 260-309.500.

Porta Systems Corporation: *See—*
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Portas, Donald; and Aubury, John F. B., to Dunlop Limited. Anti-skid systems. 3,843,210, Cl. 303-21.0cg.

Poslusny, Warren P., to Hayes-Albion Corporation. Labyrinthian fan. 3,842,902, Cl. 165-51.000.

Possati, Mario, to Finike Italiana Marposs, mesne. Control method and apparatus for a machine in particular for a grinding machine. 3,842,545, Cl. 51-165.710.

Posselt, Manfred, to Siempelkamp, G., & Co. System for loading a stack of sheets into a platen press. 3,842,990, Cl. 214-1.0bb.

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Potapov, Vladimir Petrovich: *See—*
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Potter, James L. Viscoelastic damper. 3,842,945, Cl. 188-1.00b.

Poupitch, Ougljesa Jules, to Illinois Tool Works Inc. Removable rivet. 3,842,710, Cl. 85-37.000.

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Prada, Cesare, to Compagnia Italiana Westinghouse Freni e Segnali. Electrical connector portion for automatic railway couplers. 3,842,987, Cl. 213-1.300.

Prada, Luis E., to General Electric Company. Ice crusher. 3,843,067, Cl. 241-190.000.

Prakken, Gerrit: *See—*
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Pramstraller, Wilmuth; and Stampfer, Hansjorg, to Drust AG. Enlarging apparatus with lenses of varying focal length and automatic focus therefor. 3,843,254, Cl. 355-56.000.

Pravednikov, Andrei Nikodimovich; Kopylov, Valery Vladimirovich; and Cherednichenko, Vladimir Mikhailovich. Method of producing polyphenyleneoxides-1,4 in aliphatic nitrile solvents. 3,843,604, Cl. 260-47.0et.

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Presley, C. Travis: *See—*
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Presnetsov, Gennady Nikolaevich; and Dmitriev, Andrei Vladimirovich. Apparatus for electrical discharge treatment of a gas flow. 3,843,882, Cl. 250-536.000.

Priaroggia, Paulo Gazzana; and Maschio, Gabriele, to Industrie Pirelli Societa per Azioni. Electric cable with corrugated sheath and semiconductive protective layer between the sheath and the core. 3,843,830, Cl. 174-102.00d.

Price, Robert K., to Currency Systems, Inc. Method and apparatus for packaging coins. 3,842,573, Cl. 53-35.000.

Priegnitz, Robert A., to Coilcraft, Inc. Voltage failure sensing circuit. 3,843,908, Cl. 317-31.000.

Pries, Erich E., to Otto, C., Dr., & Comp. G.m.b.H. Apparatus for transporting and quenching coke pushed from horizontal coking chambers. 3,843,460, Cl. 202-230.000.

Prince, John F. Multi-operational punch. 3,842,476, Cl. 29-200.00b.

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Prochilo, Robert Joson. Gas chambered musical instrument. 3,842,704, Cl. 84-267.000.

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Produits Chimiques Ugine Kuhlmann: *See—*
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Pryor, Timothy R. Method and apparatus for analyzing the spatial relationship of members. 3,843,261, Cl. 356-111.000.

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Pullman Incorporated: *See—*
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Punja, Nazim, to Imperial Chemical Industries Limited. Certain carbamoyloxyimine azolidines. 3,843,669, Cl. 260-306.700.

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Puski, Gabor, to Central Soya Company, Inc. Proteinaceous material for beverage use and method. 3,843,802, Cl. 426-46.000.

Q-Bit Corporation: *See—*
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Quaker Oats Company, The: *See—*
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Quame, Babington A. Method and apparatus for sample evaluation. 3,843,323, Cl. 23-230.00b.

Quetsch, Johann Peter, to Heinkel, Ernst, Maschinenbau KG. Centrifuge. 3,843,044, Cl. 233-20.00r.

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Radcliffe, Remington; and Rogers, Meyric K., to Schick Incorporated. Dispensing device for heated fluent products. 3,843,022, Cl. 222-146.0ha.
Radford, Kenneth C.; and Bratton, Raymond J., to Westinghouse Electric Corporation. Solid electrolyte cell. 3,843,400, Cl. 117-227.000.
Radici, Pierino: *See*—
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Ramanathan, Visvanathan; and Liechti, Hans Wilhelm, to Ciba-Geigy AG. Basic monazo compounds containing a quaternated hydrazide group. 3,843,622, Cl. 260-149.000.
Ramond, Pierre A., to Regie National des Usines Renault. Method of re-sharpening pinion tools. 3,842,546, Cl. 51-288.000.
Randall, David Irwin, to GAF Corporation. Alpha, omega-pyrrolidonyl polyacrolein. 3,843,684, Cl. 260-326.250.
Randmaa, Toenu Romanovich: *See*—
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Rauterberg, Ulf: *See*—
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RCA Corporation: *See*—
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Rechmeirt, Gerhard; Jacobowsky, Armin; and Wirtz, Peter, to Knapsack Aktiengesellschaft. Process for the production of vinyl chloride from 1,2-dichloroethane. 3,843,736, Cl. 260-656.00r.
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Reck, Svend Christian. Safety devices for windows and doors. 3,843,179, Cl. 292-263.000.
Redfield, Nadine. Posture pillow. 3,842,453, Cl. 5-340.000.
Redi Container Corporation: *See*—
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Rediger, John R.; and Hansen, David D., to Caterpillar Tractor Co. Clip-retained, noise-suppression material for vehicle cabs. 3,843,191, Cl. 296-39.00a.
Reding, John N., to Dow Chemical Company, The. Method for melting and purifying magnesium. 3,843,355, Cl. 75-67.000.
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Redland Tiles Ltd., mesne: *See*—
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Reed, Geoffrey Ronald; and Knox, Barry Edward, to British Iron and Steel Research Association. Packaging coils. 3,843,070, Cl. 242-55.000.
Reed, Samuel F., Jr.: *See*—
Stevens, Travis E.; and Reed, Samuel F., Jr., 3,843,700.
Reese, Johannes; and Hotze, Hermann, to Reichhold-Albert-Chemie Aktiengesellschaft. Low viscosity pulverulent thermosetting resinous composition. 3,843,751, Cl. 260-862.000.
Reesman, Stanley H., to General Foods Corporation. Inhibiting gel formation in meat-in-gravy products. 3,843,815, Cl. 426-325.000.
Reeves, Robert E.: *See*—
Brown, Philip H.; and Reeves, Robert E., 3,843,039.
Regie National des Usines Renault: *See*—
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Reichhold-Albert-Chemie Aktiengesellschaft: *See*—
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Reigel, Stanley A.; and Doyle, Charles D., to Standard Havens, Inc. Evaporative cooler. 3,842,615, Cl. 62-171.000.
Reilly, Richard J.; and Merrill, Glen L., to Cytec Development Inc. Card encoding machine. 3,842,956, Cl. 197-6.400.
Reimers, George W.; and Khalafalla, Sanaa E., to United States of America, Interior. Production of magnetic fluids by peptization techniques. 3,843,540, Cl. 252-62.520.
Reinke, Richard F. Irrigation pipe gate valve with flow control. 3,842,859, Cl. 137-504.000.
Reisling, David Charles. Flag standard. 3,843,079, Cl. 248-44.000.
Remington Arms Company: *See*—
Goodstal, Laurence K.; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., 3,843,875.
Remington Arms Company, Inc.: *See*—
Scanlon, John J.; Owen, Thomas G.; and Anderson, Raymond A., 3,842,739.
Remmey, George Bickley, to Bickley Furnaces Incorporated. Burner means for furnaces. 3,843,317, Cl. 432-176.000.
Renschen, Patrick D.; and Church, Nathan L., to International Nickel Company, Inc., The. Magnesium addition alloy. 3,843,356, Cl. 75-130.00a.
Repik, Albert J.; Miller, Charles E.; and Johnson, Homer R. Process for making activated carbon from agglomerative coal with water injection temperature control in a fluidized oxidation stage. 3,843,559, Cl. 252-421.000.
Research Corporation: *See*—
Edelman, Gerald M.; Wang, John L.; Rutishauser, Urs S.; and Millette, Clarke F., 3,843,324.
Holmes, Robert G.; and Rohrbach, Roger P., 3,843,018.
Wieth, Wolf R.; Wang, Shaw S.; and Gilbert, Seymour G., 3,843,446.
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Reti, Adrian R.: *See*—
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Scheit, Karl-Heinz; Faerber, Peter; Reuss, Karl; and Saiko, Otto, 3,843,629.
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Harwick, Warren J., 3,842,752.
Reynolds, Edgar M.: *See*—
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Reynolds, James Edward, to Kerr-McGee Chemical Corporation. Purification of magnesium perchlorate. 3,843,500, Cl. 204-82.000.
Reynolds, John Windley, to Cominco, Ltd. Rock sampling tool. 3,843,198, Cl. 299-18.000.
Reynolds Metals Company: *See*—
Wilson, Calvin L.; and Fox, John H., Jr., 3,843,027.
Rheem Manufacturing Company: *See*—
Gerlovich, Albert, 3,842,798.
Rheinmetall GmbH: *See*—
Harnau, Hans-Dieter, 3,842,742.
Rhne, Earl C., to Gould Inc. Ferroresonant transformer battery charger circuit. 3,843,918, Cl. 320-23.000.
Rhudy, John S.; and Haws, Gerald W., to Marathon Oil Company. Method of polyme flooding. 3,842,909, Cl. 166-275.000.
Ribbans, Robert Clark, III, to Du Pont de Nemours, E. I., and Company. Coating of glass fabric coated with aqueous dispersion of polymer. 3,843,386, Cl. 117-54.000.
Ricci, Vero, to Aggogle Inc. Marking apparatus for tracking a pool or billiard game. 3,843,120, Cl. 273-2.000.
Rich, Joseph M.: *See*—
Hudson, George A.; and Rich, Joseph M., 3,843,390.
Richard, Joseph D. Delayed bait dispenser. 3,842,529, Cl. 43-44.990.
Richard, William R., Jr.: *See*—
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Richardo & Co., Engineers (1927) Limited: *See*—
Barnes-Moss, Howard William, 3,842,938.
Richardson, Dean E.; and Harkreader, Gordon G., to Union Carbide Corporation. Vinyl chloride-ethylene copolymers and the preparation thereof. 3,843,616, Cl. 260-87.50c.
Richter, Hans H., to Leesona Corporation. Apparatus and process for imparting twist to filamentary material. 3,842,582, Cl. 57-77.400.
Richter, Sidney B.; and Mayer, David P., to Velsicol Chemical Corporation. Dialkylaminobenzhydryldicarboxylates. 3,843,717, Cl. 260-472.000.
Ricks, Melvin D. Hydraulic control device. 3,842,504, Cl. 32-27.000.
Ricoh Co., Ltd.: *See*—
Iwasaki, Kyuhachiro, 3,842,955.
Riddel, John W., to General Motors Corporation. Tank level unit with wave potentiometer and transverse coil spring deflection. 3,842,673, Cl. 73-313.000.
Ridgway, John A., Jr., to Standard Oil Company. Texturizing process for single-cell protein. 3,843,807, Cl. 426-137.000.

Ridley, Peter, to Northern Electric Company, Limited. Electronic key telephone system. 3,843,845, Cl. 179-99.000.

Rieckmann, Peter: *See—*
Groppenbacher, Gregor; Rieckmann, Peter; Rothe, Werner; Schalk, Heinz; and Schellhorn, Jurgen, 3,843,393.

Riegel, Peter S.; Legue, Ronald; Nikodem, Leslie F., Jr.; and Slay, Willard, to American Gas Association, Inc. Stopping apparatus for pipe lines. 3,842,864, Cl. 138-93.000.

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Riken Light Metal Industries Co., Ltd.: *See—*
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Riseman, Jacob: *See—*
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Ritter, Ernst: *See—*
Bechstein, Herbert; Hofmann, Eberhard; Jaenke, Hans-Jurger; Mulier, Rolf; Ritter, Ernst; and Staudt, Heinrich, 3,842,815.

Rivet, Huey Joseph. Amphibious marsh craft. 3,842,785, Cl. 115-1.00r.

Rivola, Luigi: *See—*
Piro, Mario; Rivola, Luigi; and Notari, Bruno, 3,843,491.

Robbins, Peter M.: *See—*
Southworth, Glen R.; Robbins, Peter M.; and Wills, Frank, 3,842,894.

Robert, Jacques: *See—*
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Roberts, David Stewart, to Burroughs Wellcome Co. Microorganism porduction. 3,843,451, Cl. 195-102.000.

Roberts, Michael G.; and Matuszak, Michael L., to Owens-Corning Fiberglas Corporation. Thermoplastic ingredient for molding compounds. 3,843,750, Cl. 260-862.000.

Robertshaw Controls Company: *See—*
Graham, Marvin M.; and Caparone, Michael J., 3,843,308.
McIntosh, Harold A., 3,843,947.
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Robertson, H. H., Company: *See—*
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Robin, Michael; and Schulte, Sheldon R., to Ashland Oil, Inc. Stabilization of olefin polymers. 3,843,600, Cl. 260-45.95c.

Robin Products Company: *See—*
Brown, Martin M.; and Krawczak, Lawrence, 3,842,565.

Robinson, Jerrold, to Dimension Weld International Corporation. Welding of designs on synthetic plastic material. 3,843,437, Cl. 156-219.000.

Robinson, John W.; and Ross, Arthur W., to Jasper Electronics Manufacturing Company. Electronic organ with rhythm attachment employing selective operation of conventional or rhythmic sounds. 3,842,701, Cl. 84-1.030.

Robinson, Leon: *See—*
Grannen, Edward A.; and Robinson, Leon, 3,843,457.

Robinson, Robert W.: *See—*
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Aykan, Kamran; Rogers, Donald B.; and Sleight, Arthur W., 3,843,554.

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Rohlwing, Robert Edward, 10% interest to Jirauch, Charles W. Tape dispenser. 3,843,439, Cl. 156-523.000.

Rohm & Haas Company: *See—*
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Rohr Industries, Inc.: *See—*
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Rolls-Royce (1971) Limited: *See—*
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Rood, Alvin A.: *See—*
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Rooney, Clarence Stanley: *See—*
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Rorer, William H., Inc.: *See—*
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Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, to HAG Aktiengesellschaft. Method for the production of caffeine-free coffee extract. 3,843,823, Cl. 426-386.000.

Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, to Hag Aktiengesellschaft. Method for the production of caffeine-free coffee extract. 3,843,824, Cl. 426-386.000.

Roselle, Pierce C.; Evans, David G.; and Bussma, Vaughn R., to Sperry Rand Corporation. Air data computer including DC to synchro signal converter. 3,843,877, Cl. 235-189.000.

Rosenberger, Dieter, to Siemens Aktiengesellschaft. Optical waveguide having a graded refractive index core formed of silicon and germanium. 3,843,229, Cl. 350-96.0wg.

Rosenkranz, Hans Jurgen: *See—*
Lachmann, Burkhard; and Rosenkranz, Hans Jurgen, 3,843,729.

Rosenstein, Nathan; deceased (by Rosenstein, Rachael; administrator). Method and apparatus of making crimped yarn. 3,842,576, Cl. 57-1.00r.

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Ross, Arthur W.: *See—*
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Ross, Stephen T.: *See—*
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Rossig, Manfred, to Redland Tiles Ltd., mesne. Apparatus for manufacturing finished products from continuously advancing layers. 3,843,298, Cl. 425-296.000.

Rostagno, Walter, to Societe d'Assistance Technique pour Produits Nestle S.A. Edible capsules. 3,843,819, Cl. 426-363.000.

Rostoviseva, Ekaterina Efimovna: *See—*
Orlov, Vladimir Alexandrovich; Zaitsev, Vera Dmitrievna; Sinitsyn, Viktor Alexeevich; and Rostoviseva, Ekaterina Efimovna, 3,843,617.

Roth, Shirley H.; and Green, Joseph, to Cities Service Company. Novel intumescent composition containing an aromatic amine sulfate. 3,843,526, Cl. 252-8.100.

Rothe, Werner: *See—*
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Rothert, Horst, to Fischer, Karl, Apparate-und Rohrleitungsbau. Method and apparatus for treating knit goods, particulary hosiery made of synthetic material. 3,842,973, Cl. 198-240.000.

Rottacker, Walter; Kordowich, Frieder; and Hettich, Karl, to SKF Industrial Trading and Development Company B.V. Method and apparatus for assembling ball bearings. 3,842,472, Cl. 29-148.40a.

Roussel-UCLAF: *See—*
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Rowland, David L. Arcuate wire assembly coated with plastic. 3,843,477, Cl. 161-125.000.

Roy, Mahlon T.: *See—*
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Royet, Paul Ferdinand. Wheel-mounted luggage. 3,842,953, Cl. 190-18.00a.

Rubinfeld, Joseph; Lemieux, Raymond Urgel; and Raap, Rintje, to Bristol-Myers Company. Process for rearranging 6-acylamidopenicllanic acid-1-oxides to 7-acylamido-3-methyl-ceph-3-em-4-carboxylic acids. 3,843,637, Cl. 260-243.00c.

Rubinstein, Herbert J.: *See—*
Rubinstein, Morton K., 3,843,841.

Rubinstein, Morton K., 50% to Rubinstein, Herbert J. Remotely actuated automatic telephone care system. 3,843,841, Cl. 179-5.00p.

Rubinstein, Rafael. Novel heating, ventilating and air-conditioning system. 3,842,903, Cl. 165-122.000.

Rucker Company, The: *See—*
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Rudolph, Dietmar: *See—*
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Ruggeri, Mariano Vecchio: *See—*
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Ruka, Roswell J.: *See—*
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Rupert, Robert J., to Bucyrus-Erie Company. Hydraulic crowd cable take-up system. 3,843,095, Cl. 254-173.00b.

Rushing, Frank C.; Gilbert, Lynford W.; and Williams, Norman P., to Westinghouse Electric Corporation. Reflector. 3,843,238, Cl. 350-310.000.
Russel, William: *See—*
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Russell, Carl D., to Aquarius Inc. Apparatus accommodating panel construction. 3,842,988, Cl. 214-1.0sw.
Russell, Matthew J.: *See—*
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Russell, Sid; Young, Frederick A.; and Kellner, Jordan D., to United Aircraft Corporation. Electrolytic production of boron. 3,843,497, Cl. 204-64.00r.
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Ruyle, William V.: *See—*
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Ryan, Charles Wilson. Vehicle axle support device for tandem trailers axle. 3,843,153, Cl. 280-150.00g.
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Kievits, Anton Arnoldus, 3,842,452.
Sacalis, John Nicholes. Method and device for increasing the life of cut flowers. 3,842,539, Cl. 47-58.000.
Sagawa, Naotoshi: *See—*
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Saiko, Otto: *See—*
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Saito, Kiyosi, to Agency of Industrial Science & Technology. Process for fluidized combustion of plastics. 3,843,339, Cl. 48-197.00r.
Sakaguchi, Tadao: *See—*
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Sakaguchi, Toshiaki: *See—*
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Samuelson, Hans Olof; and Croon, Ingemar Liss-Albin, to Mooch Domsjo Aktiegolag. Impregnation of cellulosic pulp under superatmospheric pressure with waste alkaline oxygen gas bleaching liquor followed by oxygen-alkali bleaching. 3,843,473, Cl. 162-40.000.
Sanders, Willis W. Brush assembly. 3,842,850, Cl. 132-84.00b.
Sandler, Yehuda L., to Westinghouse Electric Corporation. Method of determining surface area and meter therefor. 3,843,489, Cl. 204-1.00t.
Sandoz-Wander, Inc.: *See—*
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Coombs, Robert V.; and Houlihan, William J., 3,843,666.
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Sano, Yoshiaki; Hirose, Yoshitaka; and Miki, Yasumasa, to Matsushita Electric Industrial Company. Frying appliance. 3,842,725, Cl. 99-403.000.
Santilli, Arthur A.; and Kim, Dong H., to American Home Products Corporation. 5,6,7,8-Tetrahydro-5-oxo-pyrido(2,3-d) pyrimidine-6-carbonitriles and related compounds. 3,843,645, Cl. 260-247.20b.
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Sapino, Chester, Jr.; and Ruggeri, Mariano Vecchio, to Briston-Myers Company. Production of cephalexin via methoxymethyl ester. 3,843,639, Cl. 260-243.00c.
Sarett, Lewis H.; and Ruyle, William V., to Merck & Co., Inc. 5-(Oxazolyl)- and 5-(thienyl)-salicylic acids. 3,843,671, Cl. 260-307.00r.
Sargent, Edward A.; and Doner, Arthur J., to Grumman Ecosystems Corporation. Apparatus for disposing of solid wastes. 3,842,762, Cl. 110-14.000.
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Sato, Masamichi; Takimoto, Masaaki; and Komaki, Takao, to Fuji Photo Film Co., Ltd. Method for charging electrophotographic material. 3,843,885, Cl. 250-326.000.
Sato, Masanori: *See—*
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Sauerwein, Kurt; and Goedecke, Hans, said Goedecke assor. to said Sauerwein, Kurt. Device for examining materials or for surgical treatments by gamma ray irradiation. 3,843,891, Cl. 250-483.000.
Savin Business Machines Corporation: *See—*
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Sax, Alan M., to Redi Container Corporation. Corner protector construction. 3,843,038, Cl. 229-14.00c.
Saxholm, Rolf. Magnetically responsive, biologically active substance and associated methods. 3,843,450, Cl. 195-99.000.
Say, Donald L., to GTE Sylvania Incorporated. Shadow mask aperture and phosphor dot arrangement in two color cathode ray tube. 3,843,900, Cl. 313-408.000.
Scales, Stanley R.: *See—*
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Scanlon, John J.; Owen, Thomas G.; and Anderson, Raymond A., to Remington Arms Company, Inc. Metallic mouth for a plastic cartridge case. 3,842,739, Cl. 102-43.00p.
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Schaffer, Robert H., to Harris-Intertype Corporation. Multi-page signatures and apparatus and method for producing same. 3,843,113, Cl. 270-61.000.
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Schaub, Gerhard; and Rudolph, Dietmar, to Gebruder Buhler Nachfolger GmbH. Speed regulating arrangement for DC motors. 3,843,913, Cl. 318-308.000.
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Schedler, Wolfgang, to Schwarzkopf Development Corporation. False twist crimper for texturing synthetic fibers. 3,842,581, Cl. 57-77.300.
Scheinberg, Stanley: *See—*
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Schering Corporation: *See—*
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Scheyer, Guido. Liquid level. 3,842,514, Cl. 33-379.000.
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Schick Incorporated: *See—*
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Schick, John W., to Mobil Oil Corporation. Method of protecting vegetation. 3,842,536, Cl. 47-2.000.
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Schieser, Warren J., to Corco, Inc. Disposable reservoir package for liquid-dispenser having float-operated valve. 3,843,021, Cl. 222-105.000.
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Schipitsin, Svyatoslav Sergeevich: *See—*
Bochanov, Viktor Nikolaevich; Minchenko, Veniamin Alexandrovich; and Schipitsin, Svyatoslav Sergeevich, 3,843,299.

Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Method and apparatus for threading yarn into a stretch and false twist crimping machine. 3,842,578, Cl. 57-34.0hs.
Schladitz, Hermann J. Heat transfer between solids and fluids utilizing polycrystalline metal whiskers. 3,842,474, Cl. 29-157.30a.
Schladitz, Hermann J., to Schladitz-Whiskers A.G. Porous electric heating element. 3,843,950, Cl. 338-208.000.
Schladitz-Whiskers A.G.: *See*—
Schladitz, Hermann J., 3,843,950.
Schlafhorst, W., & Co.: *See*—
Apken, Rainer; and Fritz, Egon, 3,842,625.
Schlapfer, Hans: *See*—
Weber, Kurt; and Schlapfer, Hans, 3,843,633.
Schlatter, Gerald Lance; and Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Fluid density sensing systems. 3,842,655, Cl. 73-32.000.
Schlumberger Technology Corporation: *See*—
Dermott, Raymond W., 3,842,919.
Schluter, Dietrich: *See*—
Ester, Wilhelm; Schluter, Dietrich; and Heitmann, Wilhelm, 3,843,721.
Schmid Laboratories, Inc., mesne: *See*—
Gordon, Harry W., 3,843,785.
Schmidt, Dennis L.; and Doorakian, Goerge A., to Dow Chemical Company, The. 3-(Trihydroca rbylphosphoranylidene)-2,5-pyrrolidinediones as latent catalysts for promoting the reaction between phenols and epoxy resins. 3,843,605, Cl. 260-47.0ep.
Schmidt, Jacob E., to McGraw-Edison Company. Low resistance terminal connector for air-depolarized cathode. 3,843,413, Cl. 136-86.00a.
Schmidt, John P.; and Garcia, Alfredo, Jr., to Halcon International, Inc. Separation of propylene oxide from other hydrocarbons. 3,843,488, Cl. 203-52.000.
Schmidt, Theodor; and Meyer, Rudolf, to Ludwig-Ofag-Indugas Industriofenanlagen GmbH. Method of and apparatus for carburizing steel bodies. 3,843,419, Cl. 148-16.500.
Schmidt, William L.; and Wright, Herschel E., to Beckman Instruments, Inc. Centrifuge rotor. 3,843,045, Cl. 233-27.000.
Schmidts, Kurt: *See*—
Fitterer, Horst; Uhl, Karl; Guenther, Friedrich; Schmidts, Kurt; and Gaiser, Dieter, 3,843,035.
Schmitt, Dieter; Baumer, Wilhelm; and Stein, Alfred, to Merck Patent Gasellschaft mit beschrankter Haftung. Indicator for the detection of metal ions. 3,843,325, Cl. 23-230.00r.
Schmitt, Paul; and Bathge, Gunter, to Wean United, Inc. Roll-piercing mills. 3,842,638, Cl. 72-239.000.
Schmitt, Paul; and Hien, Manfred, to Wean United, Inc. Guiding means for piercing mill. 3,842,640, Cl. 72-250.000.
Schmitter, Albert; and Strickler, Ernst, to Mettler Instrumente AG. Damping arrangement for a balance. 3,842,924, Cl. 177-184.000.
Schmittmann, Hans-Richard, to Bayer Aktiengesellschaft. Strand for a wire cable of synthetic wires and synthetic fibres. 3,842,584, Cl. 57-146.000.
Schneider, Fred J.: *See*—
Monahan, Jack J.; and Schneider, Fred J., 3,843,036.
Schneider, George W., Jr., to Singer Company, The. Flow profiler for high pressure rotary meters. 3,842,672, Cl. 73-253.000.
Schneider, Gerhart; Lust, Sigmund; Niethammer, Konrad; Jacobi, Ernst; Erdmann, Dietrich; and Mohr, Gunther, to Merck Patent Gesellschaft mit beschrankter Haftung. Esters of 2-halogen fluorene-9-carboxylic acids. 3,843,714, Cl. 260-469.000.
Schneider, Heinz; and Becker, Josef, to Zimmerman & Jansen G.m.b.H. Damper. 3,843,090, Cl. 251-215.000.
Schneider, Walter. Garbage bin. 3,843,223, Cl. 312-274.000.
Schneller, Joseph W.: *See*—
Shull, John D., Jr.; Smith, Richard W.; Schneller, Joseph W.; and Burke, William R., 3,842,551.
Schoerner, Roger J.; and Chia, Enrique C., to Southwire Company. Master aluminum cobalt alloy. 3,843,358, Cl. 75-147.000.
Scholl, Charles H.: *See*—
Brenner, Lawrence A.; and Scholl, Charles H., 3,842,970.
Scholz, Ray John; and Fuller, Thomas Patrick, to Printex Concrete Products, mesne. Wall attachment system. 3,842,558, Cl. 52-293.000.
Scholz, Ray John; and Fuller, Thomas Patrick, to Printex Concrete Products, mesne. Textured concrete mold construction for vertically pouring concrete slabs. 3,843,089, Cl. 249-158.000.
Schon, Erwin: *See*—
Schranz, Karl-Wilhelm; Schon, Erwin; and Hunicke, Wolfgang, 3,843,367.
Schon, Volker; Walter, Bernd R.; and Zipperling, Peter, to Messerschmitt Bolkow-Blohm GmbH. Device for securing flexible fuel tanks in an aircraft. 3,843,078, Cl. 244-135.00b.
Schottey, Jean: *See*—
Toussaint, Francois; Laroche, Pierre; Schottey, Jean; and Lambert, Emmanuel, 3,843,472.
Schranz, Karl-Wilhelm; Schon, Erwin; and Hunicke, Wolfgang, to AGFA-Gevaert Aktiengesellschaft. Photographic color developing process. 3,843,367, Cl. 96-56.000.
Schreckeneder, Karl, to Siemens Aktiengesellschaft. Device for removing components connected to a circuit. 3,842,478, Cl. 29-203.00b.
Schroder, Dieter; and Hess, Wolfgang, to Girling Limited. Vehicle braking system. 3,843,213, Cl. 303-22.00r.
Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See*—
Fess, Emil; Beitzinger, Kurt; and Koblitz, Werner, 3,842,624.
Schuetz, Hans Ulrich: *See*—
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Schulte, Sheldon R.: *See*—
Robin, Michael; and Schulte, Sheldon R., 3,843,600.
Schultz, Raymond F., to Copolymer Rubber & Chemical Corporation. Decorative cushioning strip and method for producing same. 3,843,385, Cl. 117-47.00a.
Schumperli, Albert, to International Standard Electric Corporation. Subscriber loop circuit apparatus. 3,843,844, Cl. 179-16.00f.
Schwartz, Walter, to Dominion Bridge Company Limited. Method and apparatus for bending a tubular member. 3,842,648, Cl. 72-383.000.
Schwarzkopf Development Corporation: *See*—
Schedler, Wolfgang, 3,842,581.
Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Electromagnetic suspension and guide system for vehicles adapted to switch tracks. 3,842,747, Cl. 104-148.0ms.
Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, to Krauss-Maffei AG. Electromagnetic suspension and guide system particularly for vehicles. 3,842,748, Cl. 104-148.0ms.
Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Transport system with magnetic-suspension vehicle. 3,842,749, Cl. 104-148.0ms.
Schweizer, Edward E. Suture applicator. 3,842,840, Cl. 128-334.00r.
Schwellenbach, Robert D. Trailer coupling with passageway. 3,843,158, Cl. 280-403.000.
Science Nightingale International Limited, mesne: *See*—
Foster, David Blythe, 3,843,155.
Sciortino, August M. Locking cover for coin box. 3,843,043, Cl. 232-15.000.
SCM Corporation: *See*—
Beyn, Edgar Joachim, 3,843,380.
Scozzafava, Milton V., to Addmaster Corporation. Torque transmission device. 3,842,620, Cl. 64-30.00c.
Scranton Manufacturing Company, Inc.: *See*—
Wright, Jerry L., 3,843,148.
Seagram, Joseph E., & Sons, Inc.: *See*—
Boucher, Armand R., 3,842,723.
Seales, Allan, to Signetics Corporation. Semiconductor structure with sloped side walls and method. 3,842,490, Cl. 29-578.000.
Searle, G. D., & Co.: *See*—
Dygos, John H., 3,843,660.
Kreider, Eunice M., 3,843,646.
Lowrie, Harman S., 3,843,657.
Sebenda, Jan: *See*—
Bukac, Zbynek; and Sebenda, Jan, 3,843,608.
Seeley, Robert D., to Anheuser-Busch, Incorporated. Low fat egg product. 3,843,811, Cl. 426-211.000.
Segev, Yuval. Device for positioning irrigation pipes and attaching risers thereto. 3,843,059, Cl. 239-273.000.
Seiler, Herbert; and Dussy, Paul, to Ciba-Geigy AG. Mono or disazo dyestuffs containing a diamino, halotriazinyl or pyrimidinyl substituent. 3,843,624, Cl. 260-153.000.
Seki, Kunio, to Hitachi, Ltd. Differential amplifier. 3,843,935, Cl. 330-30.00d.
Sekine, Kazuo; Mimura, Michio; Oniki, Yasuhiko; and Koyano, Nobushige, to Nippon Kokan Kabushiki Kaisha. Heavy plate cutting apparatus. 3,843,103, Cl. 266-23.00m.
Seltzer, Raymond; and Gordon, David A., to Ciba-Geigy Corporation. S-triazine tetracarboxylic acids and dianhydrides. 3,843,649, Cl. 260-248.0cs.
Selwitz, Charles M.: *See*—
Bacha, John D.; and Selwitz, Charles M., 3,843,709.
Selwitz, Charles M., to Gulf Research & Development Company. Process for preparing synthetic petrolatum. 3,843,511, Cl. 208-120.000.
Sender Ornamental Iron Works: *See*—
Sender, Wilfried E., 3,843,290.
Sender, Wilfried E., to Sender Ornamental Iron Works. EXtrusion die. 3,843,290, Cl. 425-208.000.
Sendor, Bernard T.; and Sendor, Mortimer S. Apparatus for welding paper on web press. 3,843,483, Cl. 156-380.000.
Sendor, Mortimer S.: *See*—
Sendor, Bernard T.; and Sendor, Mortimer S., 3,843,483.
Shaffer, Frank E. Toggle press. 3,842,651, Cl. 72-451.000.
Shaffer, Walter M., to Towmotor Corporation. Long load-narrow aisle truck. 3,842,996, Cl. 214-75.00g.
Shakhov, Eduard Konstantinovich: *See*—
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,843,925.
Shannahan, Robert Thomas: *See*—
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Shapiro, Norman M.: *See*—
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Sharpell, Frederick H., Jr.: *See*—
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Shavel, John, Jr.: *See*—
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,843,730.

Shea, Dennis W., to Dana Corporation. Planetary transmission. 3,842,691, Cl. 74-768.000.

Shelby, Richard K.: *See—*
Horberg, Charles, Jr.; and Shelby, Richard K., 3,843,286.

Shell Oil Company: *See—*
Staudinger, Gernot, 3,843,307.

Shell, Theodore; and Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Radar absorptive coating composition of an acrylic polymer, a polyester and an isocyanate cross-linking agent. 3,843,593, Cl. 260-40.00r.

Sherwin-Williams Company, The: *See—*
Korpics, Charles J., 3,843,337.

Shibano, Naoki: *See—*
Miyoshi, Keisuke; and Shibano, Naoki, 3,843,903.

Shibata, Jitsu; Murao, Naohumi; Mishina, Haruhiko; and Nakayama, Keiichi, to Mitsubishi Jukogyo Kabushiki Kaisha: Parachute equipment. 3,842,778, Cl. 114-209.000.

Shigeta, Fumio: *See—*
Ikegaya, Masashi; and Shigeta, Fumio, 3,843,496.

Shiio, Isamu: *See—*
Akabori, Shiro; Shiio, Isamu; and Uchio, Ryosuke, 3,843,466.

Shimomura, Naonobu. Temperature measuring equipment with polynomeal synthesis. 3,843,872, Cl. 235-92.0mt.

Shinoda, Kazuo; and Endo, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Co., Ltd. Electric fuel injection control system for internal combustion engines. 3,842,811, Cl. 123-32.0ea.

Shinshu Seiki Kabushiki Kaisha: *See—*
Gomi, Yoshifumi, 3,842,734.
Gomi, Yoshifumi, 3,842,737.

Shionogi & Co., Ltd.: *See—*
Minato, Hitoshi, 3,843,628.

Shiotani, Shigeo; and Magusa, Harumi, to Sumitomo Chemical Company Limited. Shock absorber for automobiles. 3,842,944, Cl. 188-1.00c.

Shirai, Tadashi: *See—*
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, 3,843,448.

Shlyandin, Viktor Mikhailovich: *See—*
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,843,925.

Shore, Daniel B., to International Harvester Company. Forward reverse drive control providing automatic braking. 3,843,205, Cl. 303-1.000.

Short, Joe T., to Deering Milliken Research Corporation. Apparatus and method to tuft pile fabrics. 3,842,767, Cl. 112-266.000.

Showa Denko Kabushiki Kaisha: *See—*
Hanaoka, Teruo; Naito, Hiro; Komatsu, Akitoshi; Koyama, Keizi; Kobayashi, Mitsuki; and Ohishi, Naoaki, 3,843,360.

Shull, John D., Jr.; Smith, Richard W.; Schneller, Joseph W.; and Burke, William R., to National Gypsum Company. Drywall joint systems and method for making the same. 3,842,551, Cl. 52-127.000.

Shupe, David M., to Bendix Corporation, The. Dual beam absorption type optical spectrometer. 3,843,258, Cl. 356-88.000.

Shurpik, Anton: *See—*
Pearson, Dale S.; and Shurpik, Anton, 3,843,502.

Shvedchenko, Anton Antonovich: *See—*
Kozhevnikov, Sergei Nikolaevich; Tkachenko, Arkady Semenovich; Murash, Igor Vasilievich; and Shvedchenko, Anton Antonovich, 3,842,636.

Sickinger, Hans, Company: *See—*
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Sidley, Henry, to Vulco-Sidley Machine Company (Proprietary) Limited. Glove producing apparatus. 3,843,296, Cl. 425-270.000.

Siebert, Diethelm: *See—*
Hustede, Helmut; and Siebert, Diethelm, 3,843,465.

Siegel, Edgar, to Bayer Aktiengesellschaft. 2-Hydroxy-5-lower alkyl-4'[4-lower alkoxy-6-sulpho or sulphato-hydrocarbylamino-1:3:5-triazine-2-YL amino]-azobenlene. 3,843,623, Cl. 260-153.000.

Siemens Aktiengesellschaft: *See—*
Hanni, Manfred, 3,843,927.
Keller, Wolfgang; Lugscheider, Walter; and Muehlbauer, Alfred, 3,843,331.
Kupec, Peter; and Rauterberg, Ulf, 3,843,944.
Miericke, Jurgen, 3,842,750.
Rosenberger, Dieter, 3,843,229.
Schreckeneder, Karl, 3,842,478.

Siempelkamp, G., & Co.: *See—*
Posselt, Manfred, 3,842,990.

Sigal, Michael R. Molding press. 3,843,304, Cl. 425-411.000.

Signetics Corporation: *See—*
Scales, Allan, 3,842,490.

Signode Corporation: *See—*
Meier, William A.; and Johnson, Edward P., 3,843,081.

Sillaots, Argo Aleksandrovich; Kuuse, Nikolai Ivanovich; Randmaa, Toenu Romanovich; and Loo, Villo Johannesovich. Apparatus to form fibrous laps from webs. 3,842,465, Cl. 19-163.000.

Silverado Industries, Inc., mesne: *See—*
Wildman, Alexander J., 3,842,503.

Silvestrova, Iraida Mikhailovna: *See—*
Dobrzhansky, Georgy Fedorovich; Chestmir, Barta; Belyaev, Leonid Mikhailovich; Silvestrova, Iraida Mikhailovna; and Pisarevsky, Jury Vladimirovich, 3,843,234.

Simmons, George A., to Owens-Illinois, Inc. Glass ceramic and process therefor. 3,843,342, Cl. 65-30.000.

Simon, Paul R.: *See—*
Fernandez-Rana, Victoriano; Simon, Paul R.; and Peserik, James E., 3,842,719.

Simon, Tibor: *See—*
Geiszler, Lorinc; Simon, Tibor; Varga, Mihaly; and Tolnay, Agoston, 3,843,057.

Simonian, John L.: *See—*
Keating, John T.; and Simonian, John L., 3,843,587.

Simpson, Fred E.: *See—*
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Simpson, Robert D.: *See—*
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Singer Company, The: *See—*
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Schneider, George W., Jr., 3,842,672.

Sinitsyn, Viktor Alexeevich: *See—*
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Sintokogio, Ltd.: *See—*
Hijikata, Itsuo; Kasazaki, Masayoshi; and Terada, Hideto, 3,843,301.

Societa Industriale Recerche Automotoristiche: *See—*
Giacosa, Dante, 3,842,787.

Sittek, Edvin; Katolicky, Jaroslav; Kuba, Jaroslav; and Dvorok, Edmund, to Hutni druhovyroba, generalni reditelstvi. Sectional boiler for flameless combustion of gaseous fuels. 3,842,807, Cl. 122-225.00r.

Skagit Corporation: *See—*
Wudtke, Donald J., 3,842,776.

Skarnes, Robert C.; and Howard, Lucille A., to Worcester Foundation for Experimental Biology, Inc. Process for producing prostaglandins. 3,843,467, Cl. 195-29.000.

SKF Industrial Trading and Development Company B.V.: *See—*
Rottacker, Walter; Kordowich, Frieder; and Hettich, Karl, 3,842,472.

SKF Kugellagerfabriken GmbH: *See—*
Bartling, Gerhard, 3,842,579.

Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock vehicle brake systems. 3,843,212, Cl. 303-21.00f.

Slay, Willard: *See—*
Riegel, Peter S.; Legue, Ronald; Nikodem, Leslie F., Jr.; and Slay, Willard, 3,842,864.

Sleigh, Gordon. Method of making filament. 3,843,762, Cl. 264-213.000.

Sleight, Arthur W.: *See—*
Aykan, Kamran; Rogers, Donald B.; and Sleight, Arthur W., 3,843,553.
Aykan, Kamran; Rogers, Donald B.; and Sleight, Arthur W., 3,843,554.

Sloan, Carroll D. Amusement device. 3,842,531, Cl. 46-41.000.

Slye, Norman J.: *See—*
Krueger, Archie S.; Slye, Norman J.; and Diring, James A., 3,843,218.

Smirnov, Jury Artemievich: *See—*
Khaidukov, Gennady Fedorovich; Zamuraeva, Larisa Vasilievna; Kruglikov, Anatoly Abramovich; Potapov, Vladimir Petrovich; Smirnov, Jury Artemievich; and Bronov, Mark Vladimirovich, 3,843,697.

Smith, Alan W.; and Nelson, Donald J., to Boeing Company, The. Method and apparatus for separating a consituent of a compound, such as a metal from an ore, by chemical and physical separation using a plasma in the presence of a magnetic field. 3,843,351, Cl. 75-10.00r.

Smith, Calvin S.; and McLeod, William J., to Chevron Research Company. Hydrogen manufacture using centrifugal compressors. 3,843,512, Cl. 208-212.000.

Smith, Edmund H., Jr.: *See—*
Anthony, John D., Jr.; Faulhaber, Mark E.; and Smith, Edmund H., Jr., 3,843,890.

Smith, Frederick R., to FMC Corporation. Regenerated cellulose-polyethylene glycol high fluid-holding fiber mass. 3,843,378, Cl. 106-168.000.

Smith, Ian Edward: *See—*
Vermeulen, Marinus Cornelus; Smith, Ian Edward; and Hastwell, Peter John, 3,843,538.

Smith, James; and Baxter, John Kenneth, Jr., to General Electric Company. Modular gas turbine engine. 3,842,595, Cl. 60-39.360.

Smith, James J. Hand vise. 3,843,110, Cl. 269-254.00r.

Smith, John M.: *See—*
King, Robert E.; Massey, Wayne A.; and Smith, John M., 3,843,076.

Smith, Paul R.: *See—*
Horton, Arthur E.; Brantley, Jordan W.; Smith, Paul R.; Lightfoot, Cecil W.; and Hanneman, Richard L., 3,843,911.

Smith, Richard W.: *See—*
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Smith, Robert E.: *See—*
Stevens, Harry G.; and Smith, Robert E., 3,842,645.

Smith, Stanley E.; and Steck, James R., to General Motors Corporation. Prismatic rear viewing system for motor vehicles. 3,843,237, Cl. 350-302.000.

Smithkline Corporation: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,843,794.
Sutton, Blaine M., 3,843,626.

Smithwick, Edward L., Jr., to Lilly, Eli, and Company. O-methyl acronycine salt. 3,843,658, Cl. 260-279.00r.

Snam Progetti S.p.A.: *See—*
Mauri, Marcello Massi; and Moggi, Pietro, 3,843,680.
Piro, Mario; Rivola, Luigi; and Notari, Bruno, 3,843,491.

Snead, Edwin E., to Burroughs Corporation. Helicopter optical position indicator. 3,843,263, Cl. 356-153.000.

Snider, Wanda: *See—*
Snider, William, 3,843,220.

Snider, William, 1/2 to Snider, Wanda. Simulated cake and container for cut and wrapped cake pieces. 3,843,220, Cl. 312-24.000.

Snyders, Nicolaas Johannes Cornelius: *See—*
Stoltz, Andries Johannes; Snyders, Nicolaas Johannes Cornelius; and Pickard, Elin, 3,842,512.

Sobel, Jay E., to Universal Oil Products Company. Mat of inorganic oxide fibers, its method of preparation and its impregnation with catalytic materials. 3,843,561, Cl. 252-465.000.

Sober, John V., to United States of America, Air Force. Pulse press tester. 3,842,665, Cl. 73-93.000.

Sobolev, Igor; and Panusch, Erwin, to Kaiser Aluminum & Chemical Corporation. Process for fluorinating chloroalkanes and fluorinating composition therefor. 3,843,546, Cl. 252-182.000.

Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Integrally molded circular tray for photographic slides. 3,843,247, Cl. 353-117.000.

Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Ackerman, Jacob; and Radici, Pierino, 3,843,643.

Societa' Italiana Resine S.I.R.S.p.A.: *See—*
Calcagno, Benedetto; and Colombo, Paolo, 3,843,619.

Societa' Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Montefusco, Nicola; and Manca, Marcello, 3,843,943.
Mosca, Virgilio; and Solarino, Carmelo, 3,843,835.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Rostagno, Walter, 3,843,819.

Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
Gabano, Jean-Paul; and Lehmann, Gerard, 3,843,414.

Societe d'Etudes de Machines Thermiques: *See—*
Kuhn, Karl Walter, 3,843,141.

Societe Les Piles Wonder: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Grunert, Wilhelm, 3,842,594.

Soderquist, Seven D.: *See—*
Cox, Arthur R.; Holiday, Paul R.; Lewis, Gary K.; and Soderquist, Seven D., 3,843,421.

Sohji, Yukinobu: *See—*
Iwasa, Jurzo; Naruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Sohji, Yukinobu, 3,843,788.

Solarino, Carmelo: *See—*
Mosca, Virgilio; and Solarino, Carmelo, 3,843,835.

Solomon, Karl; and Allen, John Ross, to RCA Corporation. Time division multiple access synchronization technique. 3,843,843, Cl. 179-15.0bs.

Solomon, Paul W., to Phillips Petroleum Company. Preparation of carbonyl compounds. 3,843,732, Cl. 260-599.000.

Soran, Thomas C.: *See—*
Moscaret, Eugene J.; and Soran, Thomas C., 3,843,242.

Sorensen, Elmer. Continuous pastry oven. 3,843,315, Cl. 432-122.000.

Soudijn, Willem; Van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, to Janssen Pharmaceutica N.V. Benzimidazolinone derivatives. 3,843,634, Cl. 260-240.0tc.

Soudijn, Willem; Van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, to Janssen Pharmaceutica, N.V. [(Thioxanthenyl) propyl]-triazaspiro[4,5] decan-4-ones. 3,843,635, Cl. 260-240.0tc.

Soundcoat Co., Inc., The: *See—*
Kirschner, Francis, 3,843,188.

Southam, Donald L.; and Gaffney, John Marshall, to Harris-Intertype Corporation. Lithographic printing apparatus and wash-up device. 3,842,735, Cl. 101-145.000.

Souther, Louis C. Seal wear indicating mechanisms. 3,842,792, Cl. 116-114.00q.

Southwire Company: *See—*
Schoerner, Roger J.; and Chia, Enrique C., 3,843,358.

Southworth, Glen R.; Robbins, Peter M.; and Wills, Frank, to American Metal Climax, Inc. Automatic means for remote sweep-scanning of a liquid level and for controlling flow to maintain such level. 3,842,894, Cl. 164-4.000.

Space Paper Products: *See—*
Pascua, Don F.; and Stearns, Harold C., 3,842,506.

Spaenig, Hermann; Dockner, Toni; and Frank, Anton, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of substituted imidazoles. 3,843,676, Cl. 260-309.000.

Spahrbier, Dieter, to Verta Aktiengesellschaft. Fuel cell power station. 3,843,410, Cl. 136-86.00r.

Spaulding, Tedford Hollace: *See—*
Kehl, Lawrence Joseph; Janis, Robert Gerald; and Spaulding, Tedford Hollace, 3,842,497.

Specialized Tapes Limited: *See—*
Bennett, James; and Parva, Ashby, 3,842,628.

Spector, George: *See—*
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Spector, Marshall L.; and Brian, P. L. Thibaut, to Air Products and Chemicals, Inc. Removal of sulfur oxides from stack gas. 3,843,789, Cl. 423-242.000.

Spectradyne: *See—*
Mirell, Stuart G., 3,843,961.

Speissegger, Werner; and Baumeler, Hans, to Gebruder Buehler AG. Shaft cooler construction. 3,842,516, Cl. 34-170.000.

Spence, Henry L.: *See—*
McClelland, Etheridge R.; Spence, Henry L.; Vierra, Henry R.; and White, Thomas J., 3,842,569.

Spencer, Harvey J., to Paper Converting Machine Company. Method of packaging flexible plastic bags. 3,842,568, Cl. 52-21.0fw.

Sperry Rand Corporation: *See—*
Brown, Charles H.; and Robinson, Robert W., 3,842,676.
Mumme, Clarence D., 3,842,681.
Roselle, Pierce C.; Evans, David G.; and Bussma, Vaughn R., 3,843,877.

Spinnett, Raymond G. Rotary converters having specialized interleaving elements. 3,843,284, Cl. 418-191.000.

Sprague Electric Company: *See—*
Bernard, Walter J., 3,843,492.

Sprikkelman, Gerrit W. J., to Avo Intern Transport B.V. Lifting device. 3,842,997, Cl. 214-77.00p.

Spry, Douglas O., to Lilly, Eli, and Company. 2-Spirocyclopropyl-3-cephem antibiotics. 3,843,640, Cl. 260-243.00c.

Staal & Stil A/S: *See—*
Bjerknes, Anders, 3,843,271.

Staats, James E.; and Fitzmayer, Louis H., to General Electric Company. Microwave oven having TM and TE modes. 3,843,862, Cl. 219-10.550.

Stach, Kurt: *See—*
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,843,661.

Stach, Leonard J.; and Ingwalson, Raymond W., to Velsicol Chemical Corporation. Fire retardant polymers containing halogenated N-phenyl benzamides. 3,843,598, Cl. 260-45.75r.

Stacker System, Inc.: *See—*
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Stade, James H.: *See—*
Wilkin, William G.; Wintergreen, Charles J.; and Stade, James H., 3,842,957.

Stahl-Urban Company: *See—*
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Stahlgruber Otto Gruber & Company: *See—*
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Stamicabon B.V.: *See—*
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Stamper, Martha C.: *See—*
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Stampfer, Hansjorg: *See—*
Pramstraller, Wilmuth; and Stampfer, Hansjorg, 3,843,254.

Stampfli, Harald, to Lucifer S.A. Three-way valve for fluids. 3,842,860, Cl. 137-596.170.

Standaart, Adrian W. Multi-beam cathode ray tube construction. 3,843,901, Cl. 313-409.000.

Standard Forge and Axle Company, Incorporated: *See—*
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Standard Havens, Inc.: *See—*
Reigel, Stanley A.; and Doyle, Charles D., 3,842,615.

Standard Oil Company: *See—*
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Standard Oil Company (Indiana): *See—*
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Standard Packaging Corporation: *See—*
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Standard Pressed Steel Co.: *See—*
Willey, Glenn R., 3,842,479.

Stanley Drug Products, Inc.: *See—*
Cook, Elton S.; and Fujii, Akra, 3,843,798.

Stark, Robert. Method of constructing a movable bulkhead. 3,842,484, Cl. 29-469.000.

Staudinger, Gernot, to Shell Oil Company. Process for incomplete combustion of hydrocarbons. 3,843,307, Cl. 431-8.000.

Staudt, Heinrich: *See—*
Bechstein, Herbert; Hofmann, Eberhard; Jaenke, Hans-Jurger; Muller, Rolf; Ritter, Ernst; and Staudt, Heinrich, 3,842,815.

Stauffer Chemical Company: *See—*
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Stearns, Harold C.: *See—*
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Steigenberger, Michael: *See*—
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Stephens, Ronald Bertram, to Armstrong Patents Co. Limited. Metal fittings to thermoplastic components. 3,842,482, Cl. 29-447.000.

Sterling Drug Inc.: *See*—
Bell, Malcolm R., 3,843,683.
Harrison, Thomas S., 3,843,017.
Kirchner, Frederick K.; and Zalay, Andrew W., 3,843,654.

Sterling, Henley Frank; and Alexander, John Henry, to ITT Industries, Inc. Glass deposition. 3,843,392, Cl. 117-93.1gd.

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Stevens, Frederick F., Jr., to Hoff-Stevens, Inc. Keg tapping device having improved sealing means. 3,843,172, Cl. 285-137.00r.

Stevens, Harry G.; and Smith, Robert E., to Dayton Progress Corporation. Spring assemblies having particular application to forming dies. 3,842,645, Cl. 72-344.000.

Stevens, Travis E.; and Reed, Samuel F., Jr., to United States of America, Army, mesne. Acryllyloxyacetylferrocene and copolymers thereof. 3,843,700, Cl. 260-439.0cy.

Stevens, William C., Jr.: *See*—
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Stieler, Frank R., to RCM Corporation. Rolling door operating mechanism. 3,842,892, Cl. 160-133.000.

Stiftung, Carl Zeiss: *See*—
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Groen, Siemen H.; Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., 3,843,659.

Stiles, Wade; and Dunan, George V. R. Beach-protectors. 3,842,606, Cl. 61-38.000.

Stirton, Alexander J.: *See*—
Weil, James K.; and Stirton, Alexander J., 3,843,706.

Stivers, Edward C.; and Fischer, Christopher L., to Raychem Corporation. Needle foot shoe for knitting needly. 3,842,626, Cl. 66-123.000.

Stockinger, Friedrich: *See*—
Porret, Daniel; and Stockinger, Friedrich, 3,843,675.

Stolle, Mark A.: *See*—
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Stoltz, Andries Johannes; Snyders, Nicolaas Johannes Cornelius; and Pickard, Elin, to Monres (Proprietary) Limited. Devices for sensing deviations from a horizontal plane. 3,842,512, Cl. 33-366.000.

Stoneburner, Edwin B., to Printing Developments, Inc. Releasable sheet holder. 3,842,548, Cl. 51-392.000.

Strachan, Robert G., to Merck & Co., Inc. Process for preparing levcyl-valyl-phenylalanyl methyl ester. 3,843,621, Cl. 260-112.500.

Straughan, Virgil E.: *See*—
Fotland, Richard A.; and Straughan, Virgil E., 3,843,250.

Strauss, Karl-Peter; and Koller, Wilhelm, to Rollei-Werke Franke & Heideck. Electrically controlled photographic camera. 3,842,587, Cl. 354-3.000.

Streck, Clemens, to GAF Corporation. Dyestuff solution for acrylic fibers. 3,843,322, Cl. 8-169.000.

Stretanski, Joseph Anthony; and Hoffman, Joseph Adrian, to American Cyanamid Company. Nickel cyclohexylamine complexes of 2,2-thiobis (p-alkylphenol) Light stabilizers for polyolefins. 3,843,597, Cl. 260-45.75n.

Strickler, Ernst: *See*—
Schmitter, Albert; and Strickler, Ernst, 3,842,924.

Striegl, Georg. Apparatus for turning workpieces. 3,842,697, Cl. 82-2.00e.

Strobel, Ludwig: *See*—
Muller, Anton; Konig, Hubert; and Strobel, Ludwig, 3,842,881.

Strom, Torsten Erik Theodor, to AB Broderna Ottosson & Co. Processes and apparatuses for continuously manufacturing tubular bodies of reinforced synthetic plastic. 3,843,435, Cl. 156-143.000.

Stubbmann, Albert, to Kohner Bros. Inc. Board game apparatus. 3,843,131, Cl. 273-134.00g.

Stumpel, Jan Willam Marinus Hermanus; Sanford, Peter William; and Rapley, Christopher Graham, to National Research Development Corporation. Position sensitive radiation detector. 3,843,886, Cl. 250-336.000.

Sugahara, Tokuji: *See*—
Yamada, Tuneto; Kondo, Seimei; Yoshihara, Satoshi; Sugahara, Tokuji; Murakami, Shuji; Ito, Masatsune; and Hirata, Kunio, 3,843,516.

Suggitt, Robert M.: *See*—
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Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,843,747.

Suggitt, Robert M.; Ester, John H.; and Kravitz, Stanley, to Texaco, Inc. Isomerization of c10-c14 hydrocarbons with fluorided metal-alumina catalyst. 3,843,748, Cl. 260-683.680.

Sugioka, Tomio: *See*—
Yoshiyagawa, Mitsugi; Sugioka, Tomio; and Ikeda, Yoshiro, 3,843,228.

Sugiura, Fumio: *See*—
Wada, Akihiro; Sugiura, Fumio; and Ooka, Masaki, 3,842,929.

Sugiura, Yoshio: *See*—
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Suling, Carlhans: *See*—
Logemann, Heino; Suling, Carlhans; and Lorenz, Gunter, 3,843,578.

Sumitoma Chemical Co., Ltd.: *See*—
Oida, Kyuya; Hatano, Ikuo; Sumitomo, Megumu; Oasa, Hiroshi; and Yokota, Minoru, 3,843,418.

Sumitomo Chemical Company Limited: *See*—
Shiotani, Shigeo; and Magusa, Harumi, 3,842,944.
Yagi, Yoshiharu; Sato, Hiroshi; Narisawa, Shizuo; Yasui, Seimei; Kobayashi, Akira; Hino, Minoru; and Hata, Kazuhiko, 3,843,618.

Sumitomo Chemical Company, Ltd.: *See*—
Matsuo, Masatoshi; Sakaguchi, Tadao; and Akamatsu, Takashi, 3,843,632.

Sumitomo Electric Industries, Ltd.: *See*—
Oida, Kyuya; Hatano, Ikuo; Sumitomo, Megumu; Oasa, Hiroshi; and Yokota, Minoru, 3,843,418.

Sumitomo, Megumu: *See*—
Oida, Kyuya; Hatano, Ikuo; Sumitomo, Megumu; Oasa, Hiroshi; and Yokota, Minoru, 3,843,418.

Sumitomo Shipbuilding & Machinery Co., Ltd.: *See*—
Ishikawa, Yoshitaka, 3,843,314.

Summers, Thomas Wade, to Brown & Williamson Tobacco Corporation. Process and apparatus for separating sand from botanical materials. 3,842,978, Cl. 209-469.000.

Sun Oil Company of Pennsylvania: *See*—
Duling, Irl N.; and Gates, David S., 3,843,537.

Sun Oil Company of Pennsylvania, mesne: *See*—
Gates, David S.; Hagstrom, Paul E.; and Haseltine, Marcus W., 3,843,534.

Sun Ventures Inc.: *See*—
Chong, Victor M., 3,843,737.
Wynkoop, Raymond, 3,843,513.

Sundberg, Erik Gustav, to Aktiebolaget Tudor. Galvanic electrode cover method. 3,843,412, Cl. 136-55.000.

Sundquist, John L.; and Martin, Lloyd W., to Minnesota Mining and Manufacturing Company. Card handling mechanism. 3,843,245, Cl. 353-27.000.

Sunkist Growers, Inc.: *See*—
Glenn, John G.; Ziegler, Walter; and Carter, Ned C., 3,842,727.

Susuki, Rinnousuke; Hoshi, Hiroshi; Araki, Shinichi; Miyamoto, Shinzo; and Ishii, Masao, to Lion Fat and Oil Co., Ltd. Carton spout. 3,843,037, Cl. 229-7.00r.

Suto, Munehisa; Itoh, Takuji; Tagaya, Nobuaki; and Obayashi, Takashi, to Toa Nenryo Kogyo Kabushiki Kaisha. Method of catalytic conversion of heavy hydrocarbon oils. 3,843,509, Cl. 208-111.000.

Sutton, Blaine M., to Smithkline Corporation. Anti-inflammatory compositions containing acylated-β-D-glucopyranosides and method of using them. 3,843,626, Cl. 260-210.00r.

Sutton, Robert S.: *See*—
Bondie, Dale J.; Sutton, Robert S.; and Lewelling, James D., 3,842,712.

Suyematsu, Herbert T.: *See*—
Hudspeth, Thomas; and Suyematsu, Herbert T., 3,843,941.

Suzuki, Masao, to Nippon Steel Corporation. Crusher blades of a sinter discharge part of a sintering machine. 3,843,064, Cl. 241-67.000.

Suzuki, Tadao: *See*—
Yanagida, Kisaku; Kato, Ryuichi; Suzuki, Tadao; and Takano, Yoshio, 3,843,436.

Svede, George E., to Harnischfeger Corporation. Means for extending and retracting crane boom section. 3,842,985, Cl. 212-55.000.

Svihel, Bernard T.: *See*—
Korr, Abraham L.; Mahoney, James F.; and Svihel, Bernard T., 3,842,724.

Swander, Kenneth D., Jr., to Certain-Teed Products Corporation, mesne. Double diaphragm brake operator improvements. 3,842,716, Cl. 92-63.000.

Sward, Ruba J. Baby diapers. 3,842,837, Cl. 128-284.000.

Swenson, Carl O.: *See*—
Moran, Richard L.; and Swenson, Carl O., 3,843,032.

Swerdlow, Robert; and Schilder, Emil, to Cinacor, Ltd. Multiple sound system for narrow-width motion picture systems. 3,843,241, Cl. 352-29.000.

Swick, Edwin Grant, to Illinois Tool Works Inc. Curtain wall and mounting clip therefore. 3,842,554, Cl. 52-235.000.

Swicklik, Leonard J.; and Jacobs, Lewis G., to Eastman Kodak Company. Manufacture of aqueous paste of succinylated monoglycerides. 3,843,817, Cl. 426-342.000.

Sybron Corporation: *See*—

McDonald, Robert Louis, 3,843,112.

Symons Corporation: *See—*
Gregory, R. Kirk; and Flathau, Robert J., 3,843,084.

Syria, Ronald L., to Borg-Warner Corporation. Control system regulated braking arrangement. 3,843,207, Cl. 303-21.0cg.

Syva Company: *See—*
Burkoth, Terry, 3,843,447.
Wagner, Daniel; and Ullman, Edwin F., 3,843,696.

Szydlek, Nicholas P.: *See—*
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Taga Electric Co., Ltd.: *See—*
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Tagaya, Nobuaki: *See—*
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Takada, Akitoshi: *See—*
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Takahashi, Hideomi: *See—*
Yano, Nobumitsu; Takahashi, Hideomi; and Hayasho, Yoshitaka, 3,843,803.

Takahashi, Hiroshi: *See—*
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Takahashi, Nobuaki; Ohnuki, Katsuhiro; Fujita, Yoshitoshi; and Itoh, Yasuo, to Victor Company of Japan Ltd. Four channel record reproducing apparatus with muting of speakers not used for stereo or monaural records. 3,843,850, Cl. 179-100.4st.

Takahashi, Yasushi: *See—*
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, 3,843,448.

Takano, Yoshio: *See—*
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Takaoka, Takeshi: *See—*
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Takasago Perfunery Co., Ltd.: *See—*
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Takeda Chemical Industries, Ltd.: *See—*
Naito, Hisao; Nakabayashi, Kiyoshi; and Matsuda, Terumi, 3,843,006.

Takemoto, Shizume: *See—*
Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, 3,843,609.

Takenoshita, Mitsuaki: *See—*
Nakamura, Ichiro; Fujisawa, Fumio; Takenoshita, Mitsuaki; and Yumino, Hiroshi, 3,842,943.

Takigawa, Tomoshi; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Device to adjust aperture opening angle of motion picture camera. 3,843,243, Cl. 352-209.000.

Takimoto, Masaaki: *See—*
Sato, Masamichi; Takimoto, Masaaki; and Komaki, Takao, 3,843,885.

Talbott, John W.; and Logan, James D., to Berol Corporation. Method for forming boards from particles. 3,843,756, Cl. 264-24.000.

Tamura, Hitoshi, to Mitsubishi Rayon Company, Limited. Method of manufacturing acrylonitrile polymer. 3,843,749, Cl. 260-78.50r.

Tamura, Noriyoshi: *See—*
Morikawa, Hiroyuki; Tamura, Noriyoshi; Sato, Takahiro; Yamagishi, Kazuo; and Nagai, Takeo, 3,843,738.

Tanabe, Naoto: *See—*
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Tanaka, Makoto: *See—*
Kitamoto, Yoshiyuki; Tanaka, Makoto; and Yoshimura, Nobuya, 3,843,292.

Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Electrophotographic copier of image transfer type. 3,843,252, Cl. 355-16.000.

Tantlinger, Keith W., to Rohr Industries, Inc. Bus with replaceable power unit. 3,842,927, Cl. 180-11.000.

Tapco International, Inc.: *See—*
Jandrasi, Frank J.; and Purvis, Howard A., 3,842,861.

Tascone, Ugo. Screwdriver. 3,842,875, Cl. 145-50.00c.

Tashiro, Mikio: *See—*
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Tate, Bryce E.; and Berg, Rudolph G., to Pfizer Inc. Cyano derivatives of 2-substituted-2-oxazolines. 3,843,672, Cl. 260-207.00f.

Tawara, Yoshio: *See—*
Chiba, Hiroyuki; Tawara, Yoshio; and Hirota, Eiichi, 3,843,541.

Taylor, Don A. Apparatus for transfer molding thermosetting materials. 3,843,289, Cl. 425-145.000.

Taylor, James Livingstone: *See—*
McDoughlin, Noel Peter; and Taylor, James Livingstone, 3,843,088.

Taylor, John W.: *See—*
Harting, Darrell R.; and Taylor, John W., 3,842,663.

Taylor, Maryann M.: *See—*
Feairheller, Stephen H.; Korn, Alfred H.; Harris, Edward H., Jr.; Filachione, Edward M.; and Taylor, Maryann M., 3,843,320.

Teagle, William Thomas. Braking system for vehicles. 3,843,206, Cl. 303-7.000.

Technicon Instruments Corporation: *See—*
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Teed, Richard K., to Riegel Textile Corporation. Channel cloth extrusion apparatus and process. 3,843,760, Cl. 264-171.000.

Teel, Paul H.: *See—*
Christman, Harold F.; and Teel, Paul H., 3,843,745.

Tegtmeyer, Edward K. Method and apparatus for regenerative heating in thermal power plants. 3,842,605, Cl. 60-678.000.

Teijin Limited: *See—*
Fujimaki, Masaru; Okamoto, Takehiko; and Tashiro, Mikio, 3,843,871.
Kamiyoshi, Masaya; Gouda, Masatoshi; and Kuramoto, Naoya, 3,843,484.

Tektronix, Inc.: *See—*
Beville, Robert Earl; Hofer, Bruce Edward; and Peek, William H., 3,843,873.

Teleflex Incorporated: *See—*
Farrington, Robert K.; and Horvath, Louis T., 3,842,695.

Tellerman, Edward M.: *See—*
Deniega, Jose Castillo; and Tellerman, Edward M., 3,843,069.

Temel, Franklin. Pet commode. 3,842,803, Cl. 119-1.000.

Templeton, Raymond E. Tricycle drive train with coaster brake. 3,843,145, Cl. 280-7.150.

Tenneco Chemicals, Inc.: *See—*
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Terada, Hideto: *See—*
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Terada, Kazuji: *See—*
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Terrazas, Ronaldo M.: *See—*
Terrazas, Ronaldo M.; and Washburn, Stanley (said Washburn, Stanley, assors. to), 3,842,738.

Terrazas, Ronaldo M.; and Washburn, Stanley, said Washburn, Stanley, assors. to Terrazas, Ronaldo M. Convertible graphic press. 3,842,738, Cl. 101-146.000.

Terry, Frank Duncan, to Hewlett-Packard Company. Logical synchronization of test instruments. 3,843,893, Cl. 307-87.000.

Texaco Inc.: *See—*
Cullen, William P.; Chafetz, Harry; and Hellmut, Walter W., 3,843,533.
Hopkins, Walker L.; and Edwards, Richard R., 3,843,327.
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,843,746.
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,843,747.
Lachowicz, Donald R.; and Kreuz, Kenneth L., 3,843,693.
Nebzydoski, John W.; and Patmore, Edwin L., 3,843,531.
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Texas Instruments, Incorporated: *See—*
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Theddvar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Theddvar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandvich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bonarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tstkulenko, Anatoly Konstantinovich; Ivon, Vasily Valdimirovich; and Pavlov, Leonid Viktorovich, 3,842,898.

Theisen, Dieter: *See—*
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Theodore, Ares N.: *See—*
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Theodore, Charles; and Ross, James A., to Rohr Industries, Inc. Suspension dampening for a surface support vehicle by magnetic means. 3,842,753, Cl. 105-157.00r.

Thermo Electron Corporation: *See—*
Bornhorst, Walter J.; and Coleman, Steven J., 3,843,016.

Theurer, Josef; and Folser, Karl, to Plasser, Franz, Bahnbaumaschinen-Industriegesellschaft m.b.H. Train of freight cars. 3,842,994, Cl. 214-41.000.

Thoden, John Vineland, to Kontes Glass Company. Spotter for use in thin layer chromatography and method of forming drops therewith. 3,843,053, Cl. 239-11.000.

Thomas Conveyor Company: *See—*
Herold, Robert R., 3,842,992.

Thomas, John P.; and Chu, Shih-Lin. Open flow production system and method for recovery of shallow oil reservoirs. 3,842,908, Cl. 166-268.000.

Thomas, Morton I. Table. 3,842,759, Cl. 108-161.000.

Thompson, Clarence Russell, to Koehring company. Outrigger support mechanism. 3,843,154, Cl. 280-150.500.

Thompson, James G.; and Reynolds, Edgar M., to I. I. Incorporated. Portable hoist. 3,843,093, Cl. 254-139.100.

Thomson-CSF: *See—*
Ringuet, Jacques, 3,843,910.
Trotel, Jacques; Guillot, Georges; and Fay, Bernard, 3,843,916.

Thorburn, Eugene K.: *See—*
Hamilton, Vern E.; and Thorburn, Eugene K., 3,842,713.

Thornburg, Donald R.; and Foster, Karl, to Westinghouse Electric Corporation. Normal grain growth (110) (001) textured iron-cobalt alloys. 3,843,424, Cl. 148-120.000.

Thornton, Richard D.; and Kolm, Henry H., to Massachusetts Institute of Technology. Transportation system employing an electromagnetically suspended, guided and propelled vehicle. 3,842,751, Cl. 104-148.0ss.

Thorp, Burce E., to Xerox Corporation. Blade cleaning with reverse movement. 3,843,407, Cl. 134-6.000.

Tiemens, Ulf. Method of holographically forming a three-dimensional image from a sequence of two-dimensional images of different perspective. 3,843,225, Cl. 350-3.500.

Timberlake, Thomas Edward: *See*—
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Tingle, Glenn D.: *See*—
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T'Jampens, Germain Remi; and Prakken, Gerrit, to U.S. Philips Corporation. Tungsten-bromine cycle incandescent lamp containing boron. 3,843,899, Cl. 313-222.000.

Tkachenko, Arkady Semenovich: *See*—
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Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
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Tobin, Benjamin F., III. Method of cleaning air filters. 3,843,408, Cl. 134-24.000.

Toepfl, Rosemarie: *See*—
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Toepfl, Rosemarie; Abel, Heinz; and Maeder, Arthur, to Ciba-Geigy AG. Process for finishing textiles. 3,843,391, Cl. 117-141.000.

Tohi, Yasusuke: *See*—
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Tokyo Keiki Co., Ltd.: *See*—
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Tokyo Shibaura Electric Co., Ltd.: *See*—
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Torell, Spencer P., to United Aircraft Corporation. Abradable seal construction. 3,843,278, Cl. 415-174.000.

Torricelli, Paolo, to Compagnia Italiana Tubi Metallici Flessibili S.p.A. Expansion compensator for large angular movements. 3,842,865, Cl. 138-121.000.

Touba, Ali R., to General Mills, Inc. Texturizing of protein. 3,843,816, Cl. 426-388.000.

Toussaint, Francois; Laroche, Pierre; Schottey, Jean; and Lambert, Emmanuel, to Glaverbel S.A. Method of strengthening an edge of a glass article and article with strengthened edge. 3,843,472, Cl. 161-199.000.

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Toyama, Masamichi: *See*—
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Toyo Umpanki Co., Ltd.: *See*—
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Trebillon, Emile, to Produits Chimiques Pechiney-Saint-Gobain. Process for preparing vinyl chloride based telomers and cotelomers of low molecular weight. 3,843,734, Cl. 260-653.10t.

Tretter, James R.: *See*—
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Tsuchiyasu, Kouichiro, to Minolta Camera Kabushiki Kaisha. Illumination-to-voltage conversion apparatus. 3,843,880, Cl. 250-206.000.

Tsunoda, Yoshito; and Miyamura, Yoshinori, to Hitachi, Ltd. Phase shifting plate having uniform transmittance. 3,843,239, Cl. 350-314.000.

Tsunoo, Masahiko, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument with variable frequency division. 3,842,702, Cl. 84-1.010.

Tsuruzawa, Teruya; Ohta, Isamu; Ueda, Muneyuki; and Wulf, Hurst E. J., to Nippon Seal Co., Ltd. Rotary type sweeper. 3,842,459, Cl. 15-48.000.

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Tupper, Myron D. Tire casing. 3,843,074, Cl. 241-222.000.

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Turzillo, Lee A. Method and means for installing load bearing pile in situ. 3,842,608, Cl. 61-53.520.

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Ueda, Hiroshi; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Flash device for a photographic camera. 3,843,878, Cl. 240-1.300.

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Ulrich, Klaus-Herbert, to Fried. Krupp Gasellschaft mit beschrankter Haftung. Method for melting sponge metal using gas plasma in a cooled metal crucible. 3,843,352, Cl. 75-10.00r.

Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Belomycinic acid and process for preparing thereof. 3,843,448, Cl. 195-81.000.

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Van Poucke, Raphael Karel; Benoy, Gaston Jacob; and De Cat, Arthur Henri, to AGFA-Gevaert N.V. Yellow forming colour couplers for photographic silver halide material. 3,843,366, Cl. 96-55.000.
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Von der Eltz, Hans-Ulrich, to Farbwerke Hoechst Aktiengesellschaft vermals Meister Lucius & Bruning. Process for dyeing cellulose fibres. 3,843,318, Cl. 8-1.001.
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Wada, Akihiro; Sugiura, Fumio; and Ooka, Masaki, to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha. Automatic seat belt applying device. 3,842,929, Cl. 180-82.00c.
Wadsworth, Brent Earl: *See—*
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Wagner, Daniel; and Ullman, Edwin F., to Syva Company. Methadone analog compounds. 3,843,696, Cl. 260-404.000.
Wagner, Hans-Jochen, to Fischer, Georg, Aktiengesellschaft and Mader, Walter Dr., Lack- und Farbenfabrik Aktiengesellschaft. Method of coating an electrically conductive work piece by electrophoresis and coated articles produced by method. 3,843,503, Cl. 24-181.000.
Wagner, Kuno: *See—*
Findeisen, Kurt; Holtschmidt, Hans; and Wagner, Kuno, 3,843,652.
Wagner, Richard F. Hip fixation device. 3,842,825, Cl. 128-92.0bb.
Wahlgren, Bjorn, to Farad AB. Apparatus for determining the coordinates of an object, moveable along at least one coordinate axis. 3,843,924, Cl. 324-61.00r.
Walbro Corporation: *See—*
Tuckey, Charles H., 3,843,755.
Waldo, Russell W., to Ideal Security Hardware Corporation. Door latch construction. 3,843,177, Cl. 292-254.000.
Walker, Kurt, Dr.: *See—*
Lewandowsky, Klaus, 3,843,034.
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Wurster, Wilfred A., 3,842,461.
Waller, David B.; and Forker, Raymond A. Ocean going integrated tugbarge connection system. 3,842,783, Cl. 114-235.00r.
Waller, Roy E. S.: *See—*
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Walther, William D.; and De Regnaucourt, Robert A., to Dayton-Walther Corporation. Rim mounting. 3,843,200, Cl. 301-12.00r.
Wanek, Paul Victor, to Warwick Electronics Inc. Muting circuit for video and audio playback system. 3,843,838, Cl. 178-5.80r.
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Hartenstein, Johannes Hermann; and Satzinger, Gerhard, 3,843,627.
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,843,730.
Wartman, Lloyd Henry, to Union Carbide Corporation. Stable pumpable surries of ethylene oxide polymers. 3,843,589, Cl. 260-33.40r.
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Washburn, Stanley: *See—*
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Washio, Takaji; Iida, Kazumi; Tohi, Yasusuke; and Aizawa, Tatsuo, to Mita Industrial Company, Limited. Copying machine equipped with synchronously exposing mechanism. 3,843,251, Cl. 355-13.000.
Watanabe, Hikoitsu. Electric motor hammer. 3,842,916, Cl. 173-53.000.
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Waxman, Burton Harvey; Shannahan, Robert Thomas; and Viro, Felix, to GAF Corporation. Instant access one-layer color photography with color screen containing color couplers. 3,843,370, Cl. 96-77.000.

Wayne, Kenneth. Tool. 3,842,696, Cl. 81-425.00r.

Wean United, Inc.: *See—*
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Kent, Francis J.; and Jaworski, Goerge, 3,842,642.
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Weber, Albert L., 50% to Watkins, Lloyd J. Resilient pivot joint for an artificial leg resilient. 3,842,443, Cl. 3-2.000.

Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzene-sulfonyl semicarbazides. 3,843,661, Cl. 260-293.660.

Weber, Kurt; and Schlapfer, Hans, to Ciba-Geigy AG. Divinyl-kiphenyl compounds. 3,843,633, Cl. 260-240.00c.

Weber, T. Jerome; and Yokomizo, Clifford T., to United States of America, Atomic Energy Commission. Roll rate control system. 3,843,075, Cl. 244-3.150.

Wehner, William C., 40% to Crawford, Howard E. and 20% to Hauke, Robert C. Spring hinge structures. 3,842,463, Cl. 16-142.000.

Weil, James K.; and Stirton, Alexander J., said Weil assor. to the United States of America, Agriculture. Long chain ether alcohol sulfates from propylene oxide and 1,2-butylene oxide. 3,843,706, Cl. 260-458.000.

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Wheeler, Clayton A.: *See—*
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White, Allen A.; Garrison, Harold Keith; and Brooks, Dean P., to Hesston Corporation. Machine for loading, stacking and unloading crops. 3,842,730, Cl. 100-245.000.

White, James A.; and Nowosielski, Peter, to General Electric Company. Removable oven door hinge system. 3,842,542, Cl. 49-386.000.

White, Ralph L., Jr., to Morton-Norwich Products, Inc. 1-[(5-(p-Methoxyphenyl)furfurylidene)amino) hydantoin. 3,843,636, Cl. 260-240.00g.

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Whitehurst, Darrell Duayne: *See—*
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Whitley, William P., Jr. Hot dip galvanized torsion bar suspension system. 3,843,149, Cl. 280-124.00b.

Whitlock, Jacob Oscar. Highway railway crossing. 3,843,051, Cl. 238-8.000.

Whitney, John K. Fluid containing mattress. 3,842,455, Cl. 5-348.0wb.

Whitney, Karl R., Jr. Chess game for two, three or four players. 3,843,130, Cl. 273-131.0kp.

Whittaker, Harold, to Carding Specialists Co., Limited. Yarn heaters. 3,843,868, Cl. 219-470.000.

Whittington, J. Mark C.; Meyer, John E.; and Tingle, Glenn D., to GAF Corporation. Oil absorbent foamed silicate for oil pollution control. 3,843,306, Cl. 431-8.000.

Wicke, Charles H., to ACF Industries, Incorporated. Heat responsive safety device for manual gate valve operators. 3,842,854, Cl. 137-77.000.

Widdig, Arno; Kuhle, Engelbert; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul Ernst, to Bayer Aktiengesellschaft. Amidophenylisothioureas. 3,843,715, Cl. 260-470.000.

Wideman, Harold A.; and Wideman, Ronald H., to Poly Wide, Inc. Disposable laminate product and method of making it. 3,842,832, Cl. 128-169.000.

Wideman, Ronald H.: *See—*
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Wiebelhaus, Virgil D. Methods for producing glucocorticoid-like water diuretic and anti-inflammatory activity with decinine. 3,843,795, Cl. 424-267.000.

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Wiegand, Karl E., to Ethyl Corporation. 3-Carbamoyl-3,4-epoxybutyric acid and the alkali metal, alkaline earth metal and ammonium salts. 3,843,692, Cl. 260-348.00a.

Wiegand, Karl E., to Ethyl Corporation. Chemical process and compositions. 3,843,711, Cl. 260-465.400.

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Wikholm, Karl Oskar: *See—*
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Wildman, Alexander J., to Silverado Industries, Inc., mesne. Method for orthodontic treatment. 3,842,503, Cl. 32-14.00a.

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Wilkin, William G.; Wintergreen, Charles J.; and Stade, James H., to Shapiro, Norman M. and Wilkin, William G. Electrically heatable selective marking apparatus. 3,842,957, Cl. 197-6.400.

Wilkinson Sword Limited: *See—*
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Wilkowsky, Murray: *See—*
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Willey, Glenn R., to Standard Pressed Steel Co. Collar assembly for use with a rivet and method of assembling a joint. 3,842,479, Cl. 29-423.000.

Williams, Haydn Windsor Richard; and Rooney, Clarence Stanley, to Merck Sharp & Dohme (I.A.) Corporation. 1,8-Naphthyridine compounds. 3,843,663, Cl. 260-296.00n.

Williams, Joseph; Bradley, Clifford D.; and Mottin, Howard C., to United States of America, Army. Walking wheeled vehicle. 3,842,926, Cl. 180-8.00r.

Williams, Michael. Bowling ball drilling machines. 3,843,276, Cl. 408-236.000.

Williams, Norman P.: *See—*
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Williams, Richard; and Riotto, Dominic, to Phillips-Van Heusen Corporation. Collar construction. 3,842,435, Cl. 2-132.000.

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Williamson, Roger C.: *See—*
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Willing, Robert; and Cooper, Gary L., to North American Rockwell Corporation. Electrolytic solution for level devices. 3,843,539, Cl. 252-62.200.

Willis, Earl C.; and Gothard, Ramon A., to Peabody Coal Company. Mine roof drilling, bolting and plating machine. 3,842,610, Cl. 61-63.000.

Willis, Howard R. Ramp loading motorcycle carrier rack. 3,843,001, Cl. 214-450.000.

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Wilson, Calvin L.; and Fox, John H., Jr., to Reynolds Metals Company. Fluid dispensing container construction. 3,843,027, Cl. 222-400.700.
Wilson, Evelyn Egan, Sherrill, J. N., Jr.: *See*—
Wilson, John Hart, 3,843,096.
Wilson, John Hart, to Wilson, Evelyn Egan, Sherrill, J. N., Jr. and Hulber, Virginia Wilson; executors said Wilson, John H., deceased, estate of. Traction drum winch which exerts a predetermined constant tension on a cable. 3,843,096, Cl. 254-173.00r.
Wilson, Raymond F.; Peck, Reese A.; and Guptill, Frank E., Jr., to Texaco Inc. Split flow hydrodesulfurization and catalytic cracking of residue-containing petroleum fraction. 3,843,508, Cl. 208-89.000.
Wilson, Ronald W., to Allis-Chalmers Corporation. Combine drive torque sensing. 3,842,637, Cl. 74-230.17m.
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Wireman, Jack; Linda, Yorba; and Kosla, Leslie A., to AMF Incorporated. Tire tread winding machine having a mechanically programmed control system. 3,843,482, Cl. 156-350.000.
Wirth, Robert A., Sr. Tire and wheel carrier. 3,843,033, Cl. 224-42.240.
Wirtz, Peter: *See*—
Rechmeirt, Gerhard; Jacobowsky, Armin; and Wirtz, Peter, 3,843,736.
Wise, Carlton H. Coupling for hose, pipe, tubing or the like. 3,843,169, Cl. 285-39.000.
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Wolf, Robert L., to Mount Sinal Research Foundation, Inc. Radioimmunoassay of angiotensin and renin activity. 3,843,775, Cl. 424-1.000.
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Wolk, Piero, to Dresser Industries, Inc. Coiled spring well instrument positioner. 3,842,918, Cl. 175-4.000.
Wong, Gin O., to Purex Corporation. Method of controlling human appetite. 3,843,786, Cl. 424-180.000.
Wong, Mynin. Adjustable ceiling strut. 3,842,561, Cl. 52-484.000.
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Woodard, Dudley H.; and Woodard, Dudley G., 3,842,705.
Woodard, Dudley H.; and Woodard, Dudley G. Stringed instruments with improved strings due to irradiation and process for producing the same. 3,842,705, Cl. 84-297.00s.
Woodland, Paul C.; and Moldovan, Daniel, to Dow Chemical Company, The. Heat resistant compositions. 3,843,568, Cl. 260-2.50b.
Woods, Charles R.: *See*—
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Woods, Ralph A., to Kaiser Aluminum & Chemical Corporation. Aluminum brazing sheet. 3,843,333, Cl. 29-191.000.
Wooten, George W., to Monsanto Research Corporation. Microwave-excited emission detector. 3,843,257, Cl. 356-85.000.
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Worsley, Michael: *See*—
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Wren, Martha A.; and Mullen, Joseph D., to General Mills, Inc. Process for producing low calorie pasta. 3,843,818, Cl. 426-346.000.
Wright, Edward S.; Angstadt, John W.; and Kroiopp, Otto C., to Blaw-Knox Food and Chemical Equipment, Inc. Process and apparatus for treating solids enriched wash liquids. 3,843,406, Cl. 127-27.000.
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Wyman, Charles L.; and Howe, Thomas L., to United States of America, National Aeronautics and Space Administration. Strain gauge ambiguity sensor for segmented mirror active optical system. 3,842,509, Cl. 33-180.00r.
Wyman, Dennis G. Hand propelled toy vehicle. 3,843,157, Cl. 280-249.000.
Wynkoop, Raymond, to Sun Ventures, Inc. Method of improving the viscosity index of lubricating oils. 3,843,513, Cl. 208-282.000.
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Yagi, Shizuo; and Atsumi, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Carburetor. 3,842,810, Cl. 123-32.00r.
Yagi, Yoshiharu; Sato, Hiroshi; Narisawa, Shizuo; Yasui, Seimei; Kobayashi, Akira; Hino, Minoru; and Hata, Kazuhiko, to Sumitomo Chemical Company Limited. Process for producing butadine polymer. 3,843,618, Cl. 260-94.300.
Yamada, Tuneto; Kondo, Seimei; Yoshihara, Satoshi; Sugahara, Tokuji; Murakami, Shuji; Ito, Masatsune; and Hirata, Kunio, to Toyo Gas Chemical Industry, Inc. Process for treating waste solutions containing cyano-heavy metal-complex compounds. 3,843,516, Cl.210-22.000.
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Yamamoto, Nobuo; Yoneyama, Masakazu; and Ohmura, Kunioki, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive element. 3,843,368, Cl. 96-67.000.
Yamamoto, Yasuo; and Masawaki, Keizo, to Mitsubishi Gas-Chemical Company, Inc. Epoxy resins consisting essentially of N, N, N, N'-tetraglycidly bisaminomethylcyclo-hexane. 3,843,565, Cl. 260-2.0ep.
Yamamura, Hisashi; and Hosoi, Katuo, to Nippon Telegraph and Telephone Public Corporation. DC-to-DC converter. 3,843,919, Cl. 321-2.000.
Yan, Tsoung-Yuan, to Mobil Oil Corporation. Aromatization process and catalyst therefor. 3,843,741, Cl. 260-673.500.
Yanagida, Kisaku; Kato, Ryuichi; Suzuki, Tadao; and Takano, Yoshio, to Kyowa Leather Cloth Co., Ltd. Method of producing synthetic leathers. 3,843,436, Cl. 156-148.000.
Yano, Nobumitsu; Takahashi, Hideomi; and Hayasho, Yoshitaka, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing fibers from natural protein of animal origin. 3,843,803, Cl. 426-56.000.
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Fuji Photo Film Co., Ltd.: *See*—
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Gardner, Irwin J., C. Cozewith, to Exxon Research and Engineering Co. Continuous process for the production of ethylene copolymers. Re. 28,206, 10–22–74, Cl. 260—80.78.

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Holt, Videmark, and Christiansen. 233,344.

Vizina, Clarence H., Jr., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,323, 10–22–74, Cl. D12—142.

Vizina, Clarence H., Jr., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,324, 10–22–74, Cl. D12—143.

Waldo, Russell W., to Ideal Security Hardware Corp. Crossbolt deadlock. 233,309, 10–22–74, Cl. D8—132.

Walker Crosweller & Co., Ltd. : *See*—
Arbon, Dennis C. 233,341.

Webcraft Packaging, Inc. : *See*—
Katz, Robert E. 233,335.

Wells, Andy J. Necktie. 233,276, 10–22–74, Cl. D2—351.

Wilbourn, Melvin O. Convertible dining and game table. 233,278, 10–22–74, Cl. D6—27.

Wilfert, Karl, to Daimler Benz Aktiengesellschaft. Automobile. 233,321, 10–22–74, Cl. D12—92.

Wilkey, Frank, Jr. : *See*—
Kneale, Collan B., and Wilkey. 233,345.

Wilson, Robert M., to Dare Products, Inc. Electrical fence insulator. 233,311, 10–22–74, Cl. D8—230.

Winrow, Thomas. Seat. 233,284, 10–22–74, Cl. D6—62.

Wood, Mark A. Building structure. 233,334, 10–22–74, Cl. D13—1.

Woodward, Billy G. : *See*—
Court, Jules A., and Woodward. 233,342.

Xerox Corp. : *See*—
Schachner, Leonard. 233,369.

Yordon, Leonard M., to Repadco Inc. Litter receptacle. 233,304, 10–22–74, Cl. D7—194.

Zandler, Melvin E. Chemical demonstration apparatus. 233,338, 10–22–74, Cl. D19—62.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 22, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

61	3,842,434
132	3,842,435
157	3,842,436
237	3,842,437
	3,842,438

CLASS 3

1	3,842,439
	3,842,440
	3,842,441
	3,842,442
2	3,842,443

CLASS 4

67A	3,842,444
78	3,842,445
180	3,842,446
226	3,842,447
263	3,842,448

CLASS 5

81R	3,842,449
109	3,842,450
200R	3,842,451
237	3,842,452
340	3,842,453
343	3,842,454
348WB	3,842,455
353.1	3,842,456

CLASS 6

5	3,842,457

CLASS 7

5.6	3,842,458

CLASS 8

1L	3,843,318
21A	3,843,319
94.21	3,843,320
141	3,843,321
169	3,843,322

CLASS 15

48	3,842,459
250.27	3,842,460
326	3,842,461

CLASS 16

94R	3,842,462
142	3,842,463

CLASS 17

25	3,842,464

CLASS 19

163	3,842,465

CLASS 23

230B	3,843,323
	3,843,324
230R	3,843,325
259	3,843,326
260	3,843,327
270.5	3,843,328
277C	3,843,329
288B	3,843,330
301SP	3,843,331

CLASS 24

11F	3,842,466
131C	3,842,467

CLASS 28

1.4	3,842,468

CLASS 29

25.11	3,842,469
98	3,842,470
125	3,842,471
148.4A	3,842,472
149.5C	3,842,473
157.3A	3,842,474
159R	3,842,475
183	3,843,332
191	3,843,333
191.2	3,843,334
194	3,843,335
200B	3,842,476
200D	3,842,477
203B	3,842,478
423	3,842,479
	3,842,480
434	3,842,481
447	3,842,482
450	3,842,483
469	3,842,484
470.1	3,842,485
481	3,842,486
503	3,842,487
527.6	3,842,488
575	3,842,489
578	3,842,490
580	3,842,491
588	3,842,492
596	3,842,493
603	3,842,494
620	3,842,495
624	3,842,496
628	3,842,497

CLASS 30

43.92	3,842,498
50	3,842,499
124	3,842,500
286	3,842,501
346.58	3,842,502

CLASS 32

14A	3,842,503
27	3,842,504
63	3,842,505

CLASS 33

1B	3,842,506
134R	3,842,507
157	3,842,508
180R	3,842,509
	3,842,510
277	3,842,511
366	3,842,512
367	3,842,513
379	3,842,514

CLASS 34

9	3,842,515
170	3,842,516

CLASS 35

19A	3,842,517

CLASS 36

2.5AL	3,842,518
44	3,842,519
74	3,842,520

CLASS 37

57	3,842,521
195	3,842,522

CLASS 40

65	3,842,523
145	3,842,524
159	3,842,525

CLASS 42

1A	3,842,526
75B	3,842,527

CLASS 43

43.13	3,842,528
44.99	3,842,529
54.5A	3,842,530

CLASS 44

25	3,843,336
63	3,843,337

CLASS 46

41	3,842,531
202	3,842,532

CLASS 47

1	3,842,533
1.1	3,842,534
1.2	3,842,535
2	3,842,536
37	3,842,537
58	3,842,538
	3,842,539

CLASS 48

180C	3,843,338
197R	3,843,339

CLASS 49

181	3,842,540
227	3,842,541
386	3,842,542

CLASS 51

5	3,842,543
129	3,842,544
165.71	3,842,545
288	3,842,546
334	3,842,547
392	3,842,548
	3,842,549

CLASS 52

2	3,842,550
127	3,842,551
174	3,842,552
175	3,842,553
235	3,842,554
238	3,842,555
239	3,842,556
293	3,842,558
301	3,842,557
309	3,842,559
468	3,842,560
484	3,842,561
583	3,842,562
645	3,842,563
716	3,842,564
	3,842,565
747	3,842,566

CLASS 53

7	3,842,567
21FW	3,842,568
26	3,842,570
35	3,842,573
37	3,842,569
42	3,842,574
186	3,842,571
198R	3,842,572

CLASS 56

307	3,842,575

CLASS 57

1R	3,842,576
34HS	3,842,578
34R	3,842,577
	3,842,579
	3,842,580
77.3	3,842,581
77.4	3,842,582
140R	3,842,583
146	3,842,584

CLASS 58

23A	3,842,586
23R	3,842,585
28B	3,842,588
50R	3,842,589
58	3,842,590
77	3,842,591
115	3,842,592

CLASS 60

39.28R	3,842,594
39.36	3,842,595
39.66	3,842,596
226R	3,842,597
259	3,842,598
273	3,842,599
276	3,842,600
326	3,842,601
327	3,842,602
416	3,842,603
563	3,842,604
671	3,842,593
678	3,842,605

CLASS 61

38	3,842,606
46	3,842,607
53.52	3,842,608
53.6	3,842,609
63	3,842,610
70	3,842,611
72.1	3,842,612

CLASS 62

50	3,842,613
56	3,842,614
171	3,842,615
225	3,842,616
294	3,842,617
490	3,842,618

CLASS 64

23.5	3,842,619
30C	3,842,620
32F	3,842,621

CLASS 65

21	3,843,340
22	3,843,341
30	3,843,342
33	3,843,343
65A	3,843,344
	3,843,345
	3,843,346

CLASS 66

50B	3,842,622
64	3,842,623
82R	3,842,624
87	3,842,625
123	3,842,626
151	3,842,627
193	3,842,628

CLASS 70

264	3,842,629

CLASS 71

67	3,843,347
92	3,843,348

CLASS 72

56	3,842,630
63	3,842,631
70	3,842,632
90	3,842,633
142	3,842,634
177	3,842,647
208	3,842,635
	3,842,636
239	3,842,638
	3,842,639
250	3,842,640
263	3,842,641
	3,842,642
286	3,842,643
342	3,842,644
344	3,842,645
354	3,842,646
383	3,842,648
391	3,842,649
409	3,842,650
451	3,842,651
454	3,842,652

CLASS 73

15.6	3,842,654
32R	3,842,656
32	3,842,655
37.5	3,842,657
37.9	3,842,658
40.7	3,842,659
61.1C	3,842,660
67.1	3,842,661
	3,842,662
67.2	3,842,663
88R	3,842,664
93	3,842,665
141AB	3,842,667
141A	3,842,666
159	3,842,668
193R	3,842,669
194F	3,842,670
209	3,842,671
253	3,842,672
313	3,842,673
362AR	3,842,674
363.9	3,842,675
384	3,842,676
421.5A	3,842,678
421.5R	3,842,677
423A	3,842,679
425.4P	3,842,680
505	3,842,681
509	3,842,682

CLASS 74

10.41	3,842,683
217B	3,842,684
217C	3,842,685
230.17M	3,842,637
424.8A	3,842,686
469	3,842,687
479	3,842,689
594.6	3,842,688
625	3,842,690
768	3,842,691
786	3,842,692
864	3,842,693
867	3,842,694
876	3,842,695
878	3,842,653

CLASS 75

.5BA	3,843,349
.5R	3,843,350
10R	3,843,351
20F	3,843,353
52	3,843,354
67	3,843,355
130A	3,843,356
146	3,843,357
147	3,843,358
171	3,843,359
222	3,843,360

CLASS 81

425R	3,842,696

CLASS 82

2E	3,842,697

CLASS 83

88	3,842,698
157	3,842,699
743	3,842,700

CLASS 84

1.01	3,842,702
1.03	3,842,701
1.27	3,842,703
267	3,842,704
297S	3,842,705
400	3,842,706
474	3,842,707
485	3,842,708

CLASS 85

5	3,842,709
37	3,842,710

CLASS 89

1.87	3,842,711

CLASS 90

11C	3,842,713
11D	3,842,712

CLASS 91

459	3,842,714

CLASS 92

31	3,842,715
63	3,842,716
162R	3,842,717
171	3,842,718

CLASS 93

93M	3,842,719

CLASS 96

1.4	3,843,361
38.3	3,843,362
48R	3,843,363
50R	3,843,364
55	3,843,365
	3,843,366
56	3,843,367
67	3,843,368
74	3,843,369
77	3,843,370
84R	3,843,371
101	Re.28,308
109	3,843,372

CLASS 98

1.5	3,842,720
60	3,842,721
119	3,842,722

CLASS 99

277.1	3,842,723
358	3,842,724
403	3,842,725
425	3,842,726
592	3,842,727

CLASS 100

7	3,842,728
229A	3,842,729
245	3,842,730
264	3,842,731
270	3,842,732

CLASS 101

38A	3,842,733
93.14	3,842,736
93.34	3,842,734
	3,842,737
145	3,842,735
146	3,842,738

CLASS 102

43P	3,842,739
64	3,842,740
69	3,842,741
70.2GA	3,842,742
81.2	3,842,743

CLASS 104

88	3,842,744
93	3,842,745
147R	3,842,746
148MS	3,842,747
	3,842,748
	3,842,749
148SS	3,842,750
	3,842,751
166	3,842,752

CLASS 105

157R	3,842,753
368T	3,842,754
480	3,842,755
	3,842,756
486	3,842,757

CLASS 106

1	3,843,373
14	3,843,374
43	3,843,375
54	3,843,376
56	3,842,760
157	3,843,377
168	3,843,378
290	3,843,379
300	3,843,380

CLASS 108

98	3,842,758
161	3,842,759

CLASS 109

59	3,842,761

CLASS 110

14	3,842,762
40C	3,842,763

CLASS 111

7	3,842,764
78	Re.28,207

CLASS 112

9	3,842,765
121.12	3,842,766
266	3,842,767

CLASS 114

16R	3,842,768
	3,842,769
20B	3,842,770
56	3,842,771
61	3,842,772
65R	3,842,773
66.5H	3,842,774
74R	3,842,775
126	3,842,777
206R	3,842,776
209	3,842,778
230	3,842,779
	3,842,780
	3,842,781
235R	3,842,782
	3,842,783

CLASS 115

.5R	3,842,784
1R	3,842,785
6.1	3,842,786
16	3,842,787
34R	3,842,788
35	Re.28,209
41HT	3,842,789

CLASS 116

67R	3,842,791
114Q	3,842,792

CLASS 117

17.5	3,843,381
33.5T	3,843,382
36.8	3,843,383
36.9	3,843,384
47A	3,843,385
54	3,843,386
62.2	3,843,387
66	3,843,388
68	3,843,389
93.1GD	3,843,392
100A	3,843,393
106A	3,843,394
109	3,843,395
138.8F	3,843,390

141 3,843,391
3,843,396
161UD 3,843,397
201 3,843,398
217 3,843,399
3,843,405
227 3,843,400
3,843,401
232 3,843,402
235 3,843,403
3,843,404

CLASS 118

4 3,842,793
49 3,842,794
50 3,842,795
3,842,796
222 3,842,797
326 3,842,798
408 3,842,799
637 3,842,800
638 3,842,801

CLASS 119

1 3,842,802
3,842,803
3 3,842,804
52B 3,842,805
106 3,842,806

CLASS 122

225R 3,842,807

CLASS 123

25P 3,842,808
32AE 3,842,809
32EA 3,842,811
32R 3,842,810
75RC 3,842,812
119A 3,842,814
119R 3,842,813
140R 3,842,815
148E 3,842,816
3,842,817
169MG 3,842,818
3,842,819

CLASS 126

110R 3,842,820
125 3,842,821

CLASS 127

27 3,843,406

CLASS 128

2R 3,842,822
66 3,842,823
92BA 3,842,824
92BB 3,842,825
130 3,842,826
131 3,842,827
145.8 3,842,828
152 3,842,829
155 3,842,830
3,842,831
169 3,842,832
194 3,842,833
245 3,842,834
260 3,842,835
272 3,842,836
284 3,842,837
3,842,838
312 3,842,839
334R 3,842,840
419P 3,842,842
3,842,843
419R 3,842,841
422 3,842,844

CLASS 131

2 3,842,845
140P 3,842,846

CLASS 132

7 3,842,847
3,842,848
46R 3,842,849
84A 3,842,851
84B 3,842,850

CLASS 134

6 3,843,407
24 3,843,408
34 3,843,409

CLASS 136

55 3,843,412
86A 3,843,413
86R 3,843,410
135S 3,843,411
156 3,843,414

CLASS 137

39 3,842,852
75 3,842,853
77 3,842,854
85 3,842,855
179 3,842,856
242 3,842,857
458 3,842,858
504 3,842,859
596.17 3,842,860
628 3,842,861
814 3,842,862

CLASS 138

30 3,842,863
93 3,842,864
121 3,842,865
128 3,842,866

CLASS 139

122N 3,842,867
134 3,842,868
188 3,842,869

CLASS 141

286 3,842,870

CLASS 144

2N 3,842,871
3D 3,842,872
218 3,842,873
309R 3,842,874

CLASS 145

50C 3,842,875

CLASS 148

2 3,843,415
11.5R 3,843,416
12 3,843,417
3,843,423
12.7 3,843,418
16.5 3,843,419
31.55 3,843,420
32 3,843,421
111 3,843,422
120 3,843,424
187 3,843,425

CLASS 149

19.2 3,843,426

CLASS 150

1.5R 3,842,876

CLASS 151

14R 3,842,877
21C 3,842,878

CLASS 152

209R 3,842,879
210 3,842,880
213A 3,842,881
352 3,842,882
354 3,842,883
361R 3,842,884
3,842,885
370 3,842,886
3,842,887

CLASS 156

3 3,843,427
7 3,843,428
20 3,843,430
62.2 3,843,431
69 3,843,429
72 3,843,432
73 3,843,433
110 3,843,434
143 3,843,435
148 3,843,436
219 3,843,437
244 3,843,438
251 3,843,485
297 3,843,486
334 3,843,487
335 3,843,484
350 3,843,482
354 3,843,440
380 3,843,483
523 3,843,439

CLASS 159

4CC 3,842,888

CLASS 160

26 3,842,889
3,842,890
35 3,842,891
133 3,842,892

CLASS 161

4 3,843,474
3,843,475
112 3,843,476
125 3,843,477
164 3,843,478
165 3,843,479
167 3,843,480
190 3,843,481
199 3,843,472

CLASS 162

17 3,843,468
40 3,843,473
273 3,843,469
343 3,843,470

CLASS 164

4 3,842,893
3,842,894
49 3,842,895
86 3,842,896
252 3,842,897
3,842,898
253 3,842,899
326 3,842,900

CLASS 165

2 3,842,901
51 3,842,902
122 3,842,903
145 3,842,904

CLASS 166

155 3,842,905
172 3,842,906
249 3,842,907
268 3,842,908
275 3,842,909
305R 3,842,910
307 3,842,911
3,842,912
314 3,842,913
315 3,842,914

CLASS 171

1 3,842,915

CLASS 173

53 3,842,916
90 3,842,917

CLASS 174

36 3,843,829
102D 3,843,830
116 3,843,831
151 3,843,832
153G 3,843,833

CLASS 175

4 3,842,918
4.54 3,842,919
299 3,842,920
374 3,842,921

CLASS 176

36R 3,843,471

CLASS 177

1 3,842,922
163 3,842,923
184 3,842,924
248 3,842,925

CLASS 178

5.8R 3,843,838
6 3,843,839
7.1 3,843,837
7.92 3,843,835
58A 3,843,834

CLASS 179

1J 3,843,840
5P 3,843,841
6E 3,843,842
15BS 3,843,843
16F 3,843,844
18FG 3,843,849
99 3,843,845
100.11 3,843,847
100.4ST 3,843,850
100.4M 3,843,846
175.3R 3,843,848

CLASS 180

8R 3,842,926
11 3,842,927
26R 3,842,928
82C 3,842,929
91 3,842,930
103 3,842,931

CLASS 181

33HB 3,842,941
33A 3,842,942
50 3,842,932
3,842,940

CLASS 182

2 3,842,933
37 3,842,934
81 3,842,935
129 3,842,936

CLASS 184

6.3 3,842,937
6.5 3,842,938
39 3,842,939

CLASS 187

28 3,842,943

CLASS 188

1B 3,842,945
1C 3,842,944
24 3,842,946
69 3,842,947
71.4 3,842,948
170 3,842,949
3,842,950
202 3,842,951
249 3,842,952

CLASS 190

18A 3,842,953

CLASS 192

96 3,842,954

CLASS 195

2 3,843,464
28R 3,843,465
3,843,466
29 3,843,467
30 3,843,441
31F 3,843,442
63 3,843,443
66A 3,843,445
66R 3,843,444
68 3,843,446
3,843,447
81 3,843,448
96 3,843,449
99 3,843,450
102 3,843,451
103.5R 3,843,453
103.5 3,843,452
127 3,843,454
3,843,455
139 3,843,456

CLASS 197

1R 3,842,955
6.4 3,842,956
3,842,957
18 3,842,958
52 3,842,959
53 3,842,960

CLASS 198

16R 3,842,961
25 3,842,962
31AC 3,842,963
95 3,842,964
103 3,842,965
126 3,842,966
140 3,842,967
189 3,842,968
193 3,842,969
195 3,842,970
213 3,842,971
220CB 3,842,972
240 3,842,973

CLASS 200

5E 3,843,851
16D 3,843,852
51.09 3,843,853
3,843,854
83J 3,843,855
144B 3,843,856

CLASS 201

1 3,843,459
2.5 3,843,457
39 3,843,458

CLASS 202

227 3,843,461
230 3,843,460

CLASS 203

11 3,843,462
49 3,843,463
52 3,843,488

CLASS 204

1T 3,843,489
3,843,490
10 3,843,491
25 3,843,492
30 3,843,493
34 3,843,494
35R 3,843,495
58 3,843,496
64R 3,843,497
67 3,843,498
74 3,843,499
82 3,843,500
3,843,504
129.65 3,843,501
159.18 3,843,502
181 3,843,503
195F 3,843,506
195M 3,843,505
302 3,843,507

CLASS 206

45.34 3,842,974
72 3,842,975
203 3,842,976
407 3,842,977

CLASS 208

89 3,843,508
111 3,843,509
3,843,510
120 3,843,511
212 3,843,512
282 3,843,513
310 3,843,514
326 3,843,515

CLASS 209

469 3,842,978

CLASS 210

11 3,843,517
22 3,843,516
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384	3,843,300	18	3,843,800	192	3,843,809	346	3,843,818	393	3,843,825	288	3,843,312
387B	3,843,286	36	3,843,801	204	3,843,810	360	3,843,828	399	3,843,826	329	3,843,313
388	3,843,301	46	3,843,802	211	3,843,811	363	3,843,819	CLASS 431		CLASS 432	
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395	3,843,303	65	3,843,804	241	3,843,813		3,843,821		3,843,307	122	3,843,315
411	3,843,304	92	3,843,805	293	3,843,827	380	3,843,822	22	3,843,308	124	3,843,316
465	3,843,305	106	3,843,806	307	3,843,814	384	3,843,823	90	3,843,310	176	3,843,317

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D6—	27	233,277		189	233,295	D9—	2	233,313	D13—	1B	233,333			233,347	D55—	B	233,364
		233,278		236	233,296			233,314		F	233,334			233,349	D56—	4	233,366
	32	233,279	D7—	6	233,297			233,315		R	233,330			233,350		R	233,365
	39	233,280		36	233,298		72	233,316			233,331		14A	233,351	D61—	1B	233,367
		233,281		61	233,299		176	233,317			233,332			233,352		G	233,368
		233,282			233,300		192	233,318	D19—	2	233,335		L	233,348		Q	233,369
	48	233,283		76	233,301	D10—	106	233,319		13	233,336	D34—	2R	233,353	D74—	9R	233,370
	62	233,284		99	233,302	D12—	60	233,320		26	233,337			233,354	D83—	1C	233,371
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	85	233,287	D8—	13	233,305		142	233,323	D23—	19	233,340		15AJ	233,359			233,375
		233,288		50	233,306		143	233,324		20	233,341		AN	233,357		R	233,373
	130	233,289		66	233,307		147	233,325		55	233,343		H	233,358	D92—	K	233,376
	145	233,290		98	233,308		193	233,326		75	233,342	D45—	16B	233,362		4R	233,377
	161	233,291		132	233,309			233,327		163	233,344		17	233,360		15	233,378
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,842,509
3,842,537
3,843,124
3 : 3,843,094
4 : 3,842,557
3,842,676
3,842,681
3,842,743
3,843,126
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25 : Re.28,210
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3,843,082
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3,843,107
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3,843,208
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3,842,933
3,843,068
3,843,095
3,843,169
3,843,377
3,843,411
3,843,470
56 : 3,843,163

DESIGN PATENTS

2 : 233,377
6 : 233,281
233,288
233,295
233,298
233,302
233,313
233,314
233,315
233,319
233,328
233,337
233,340
233,342
233,343
233,358
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8 : 233,310
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12 : 233,296
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39 : 233,279
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42 : 233,336
44 : 233,363
47 : 233,378
48 : 233,370
54 : 233,305
55 : 233,287
233,290

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